Protecting Emsworth Locks and Dam on the United States Ohio River

Metallisation's Arc170 equipment has been used in a challenging project to protect the Emsworth Lock and Dam on the United States Ohio River from corrosion. Metallisation's North American distributor, TMS Metalizing Systems Ltd, worked closely with its customer, Oregon Iron Works (OIW) who have thermal sprayed six dam gates with zinc aluminium alloy.

The gates make up the bulkhead, which raise and lower the sluice gate on the dam. This was part of an overhaul project to rehabilitate the dam's gate and mechanical electrical systems. OIW secured the project with Pittsburgh's District Office of the Corps.

The aim of the project was to metal spray the gates with zinc/aluminium coating to protect them from corrosion. Each of the six gates measured 115 ft long and 12 to 14 ft high (35m long, 3.65 to 4.25m high). Consisting of steel t-bars and angle iron, they created approximately 15,000 sq ft (1,400 sqm) of surface area to be sprayed. The job specifications required 85/15 zinc/aluminium material with a minimum thickness of 16 mils (400 microns).

The sheer size and shape of the structure presented OIW with a number of challenges, not least access to all surfaces to be sprayed.

As this was OIW's first thermal spray project, Dave Wixson of TMS Metalizing Systems Ltd, conferred with Ray Coury, Superintendent at OIW and Project Engineer, Devlyn Kozol, to identify the challenges and advise on the best possible approach to the project. The outcome was to opt for two Metallisation Arc170 systems, as it's the only 700A, high production arc spray system on the market with the required supplies package reach of 33 feet (10m).

Once the decision was made to use the Metallisation Arc170, TMS Metalizing Systems arranged on-site training to ensure the sprayers were fully prepared prior to starting the work.

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to the project starting. During the length of the project Steve Barker, Metallisation’s Operations Director, made several visits from the UK, to provide ongoing support and guidance to OIW. This is part of Metallisation’s commitment to its global distributors to ensure a trouble-free transition and installation of new equipment for all companies choosing Metallisation equipment. To coincide with this training and preparation, OIW also enlisted the help of SSPC, the Society for Protective Coatings, to conduct the ‘SSPC Thermal Spray Inspection Training Course’. This supported OIW’s ongoing commitment to quality and training of its staff.

The push/pull design of the Arc170, allows a 33 ft (10m) supplies package, which enabled OIW to coat the top surfaces without rotating the gate. The long supplies package meant that the thermal sprayers only needed to bring the spray gun to the top, as the spray wire and the combined drum dispensers and push unit remained on the spray booth floor. This provided valuable access to all areas of the gates, without the need for expensive, time-consuming and potentially hazardous maneuvering of the gates during spraying. The drum dispensers also resulted in lower material costs, as spooling was not required. To protect the gates from corrosion, as a result of the harsh environment in which they are located, they were sprayed with 1/8 in. (3.2mm) diameter, 85/15 zinc/aluminium alloy wire. The use of this diameter wire also has the benefit of providing a good quality coating at high throughputs with increased deposit efficiency. While remaining flexible and maneuverable over large components, enabling OIW to complete the job in a timely and cost-efficient manner.

Oregon Iron Works is a steel fabricating company, founded in 1944. They began by fabricating in the demanding hydroelectric, bridge and civil construction industries. They now fabricate and thermal spray a range of surfaces from complex bridges to sophisticated military patrol craft, and work within the marine, aerospace and nuclear industries.

Ray Coury, Superintendent, OIW, says: “We chose to work with TMS Metalizing Systems because of our relationship with Dave Wixson. Dave and the UK Metallisation team know the metalizing process inside out and both were a great support to us in approaching the challenge of the Emsworth Locks and Dam project. Now we have demonstrated our success at metalizing, we will definitely be doing more of this type of project.”

For more information, call Stuart Milton on +44 (0) 1384 252 464 or visit www.metallisation.com
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Editorial and Production Office
Kathy M. Dusa, Managing Editor
208 Third Street
Fairport Harbor, Ohio 44077
United States of America
voice: 440.357.5400
fax: 440.357.5430
email: kathydusa@thermalspray.org
spraytime@thermalspray.org

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TECHNICAL NOTES
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Cryogenic Nitrogen Gas Cooling for Thermal Spray Coatings

by Ranajit Ghosh
Project Manager, Cryogenic Cooling Applications
Air Products and Chemicals, Inc.

The current industry trend towards more heat intensive processes in thermal spray applications has exposed the inadequacy of current cooling solutions. It has highlighted the need for better thermal management of coated parts. This article describes a novel cooling approach that uses a 2-phase, cryogenic nitrogen vapor to help eliminate waste, plus improve productivity and part quality.

Current Process
HVOF thermal spray is widely used for coating critical wear parts like landing gear, bearing races, valves and turbine components. Generally, fully or partially molten metal, composite, or ceramic droplets are propelled from a gun or torch onto the workpiece. Multiple passes are required to build up the coating, since each pass only deposits ~ 0.0002 in - 0.0005 in. thickness of material. A significant amount of thermo-kinetic energy is required to deposit a dense coating onto the work surface—and a portion of this energy, manifested as heat, is absorbed by the workpiece. Improper temperature control during thermal deposition frequently leads to coating and workpiece overheating, thermal deformation and degradation of substrate material, and damaging stresses due to a mismatch of thermal expansion coefficients between the coating and substrate. When damage occurs through overheating and thermal stress, delamination of the coatings can occur in service.

Consequently, thermal management of the workpiece is extremely critical during the spray deposition process. Compressed air jets are the primary cooling method for most HVOF thermal spray operations; however, air cooling is usually insufficient and the oxygen, residual moisture and hydrocarbons that may be present in the cooling air can be detrimental to the coating quality. In spray operations involving tighter temperature control, air cooling is usually inadequate and manufacturers are often forced to introduce breaks in the process cycle so that the accumulated heat is dissipated to the ambient environment. The spray gun is moved away from the part but continues firing during the interpass cooling breaks, resulting in wasted feed powder, process gas, and booth time.

Another issue that affects productivity in spray coating operations is the set-up time for masking and de-masking. It is important to mask certain areas of the part, where the coating might not be needed. The coating of these areas might be undesirable (it may interfere with the mechanical working of the component), unneeded, or simply, uneconomical. In these cases, it is critical to provide an effective barrier to coating for these areas. Metal plates (shadow plates) are often used to protect these areas, as are masking tapes.

The desirable aspects of a masking tape are flexibility, ease of application and removal, quick clean-up and extended useful life. There is a wide variety of masking tapes available...
today with materials of construction ranging from fiberglass and metals to polymer and silicone rubbers. Metal tapes are usually difficult to make and install, while the fiberglass and polymer tapes are easy to install but difficult to remove and require extensive post-spray cleaning. Inadequacy of air cooling and build-up of temperature is the primary reason for tape degradation, e.g. thermal decomposition, hardening, or tape embrittlement.

A New Approach to Cooling

The search for a more efficient cooling approach to generate better coating properties, as well as to improve the productivity of HVOF spray coating operations has led to the development of cryogenic nitrogen gas cooling. Although cryogenic cooling methods offer a significant enhancement in the ability to remove heat quickly, they are rarely used in the thermal deposition coating industry due to the risk of non-uniform cooling, which results in variable levels of residual stresses at the substrate/coating interface and consequent issues of coating delamination and spalling. Carbon dioxide (CO₂) cooling has been used by the industry with mixed success. While CO₂ has higher heat capacity compared to nitrogen — its heat removal rate is constrained by the smaller temperature differential (CO₂ has a boiling point of -109°F [-78.5°C], while cryogenic nitrogen boils at -320°F [-196°C]). CO₂ also has a tendency to form undesired, solid deposits at the target surface whenever higher cooling rates and correspondingly higher gas flow rates are required.

Cryogenic nitrogen gas cooling has been shown to significantly improve productivity over conventional air-cooled processes. Figure 1 shows actual process data comparing the two cooling methods during deposition of a WC-Co-Cr coating on an aerospace landing gear. By eliminating the interpass cooling breaks, the cryogenic vapor cooling system shortened the spraying time by 50%, plus it reduced wasted feed powder and process gases. The nitrogen cooling system also allowed for a much tighter temperature control (± 20°F) and a significantly smaller standard deviation in workpiece temperature during coating operation.

---

**Figure 1**

Traditional Air Cooling vs. Air Products’ Thermal Spray Cooling Technology for Coatings Deposited in 11 Spray Passes

Spray from HVOF gun is directed away from the part to allow it to cool during air-cooled coating process.

Air Products’ novel thermal spray cooling technology delivers exceptional results. This graph shows actual process data for spraying aircraft landing gear with traditional air cooling compared to our nitrogen cryogenic vapor cooling system. With the Air Products thermal spray cooling technology, the part’s temperature was maintained within a much tighter range during the spray operation. In addition, it halved the spraying time and the amount of powder and process gases consumed—plus improved productivity.

---

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Subsequent characterization of the air-cooled and nitrogen-cooled samples show that the bondstrength, hardness and surface roughness of the as-sprayed coatings were essentially unchanged, while micro-porosity was reduced from 0.2 to 0.05%. The nitrogen-cooled sample also retained the substrate hardness (420 HV in the case of heat-treated 4340 steel) better than the air-cooled (395 HV) and non-cooled (390 HV) samples. In addition, oxygen pickup and carbon loss in the coating were the lowest for the nitrogen-cooled sample. In limited tests with cryogenic cooling, involving WC-Co-Cr powder, deposition efficiency was shown to increase by an average of 10 to 15% over conventional air cooling and by more than 30% over non-cooled samples.

An additional benefit of the cryogenic nitrogen vapor cooling system is the time and cost savings in the masking process. The cryogenic gas provided instant cooling of the hot top layer of the mask, avoiding heat build-up and preventing the heat from reaching the bottom of the tape. As a result, the tape bulk stayed flexible and could be removed quickly after the spray operation with a putty knife, leaving a clean residue-free surface. It could even be reused several times. Figure 2 schematically shows the effectiveness of cryogenic cooling to prevent progressive thermal degradation of silicone-based masking tapes.

The cryogenic nitrogen vapor system efficiently and uniformly cools thermally sprayed coatings by monitoring the temperature of the coating and varying the cooling intensity to match the heat generated in the spraying process. The temperature feedback system can use a variety of inputs, including single-point IR sensors, 2-D thermo-imaging IR cameras, and contact thermocouples. The PLC-controlled cooling system maximizes cooling efficiency by automatically switching cooling modes between room temperature, nitrogen gas, liquid/gaseous nitrogen mixed flow, and 100% liquid nitrogen based on user-defined temperature ranges. Discharged from a spraying nozzle or multiple sprayers, the liquid nitrogen is atomized to form rapidly boiling, microscopic droplets that turn into cryogenic nitrogen vapor within a short distance from the discharge point. This prevents undesired “wetting” of the coated surface. In addition, the multi-zone cooling control algorithm used allows individual cooling nozzles to independently switch between the cooling modes based on instant average and time-averaged temperature feedback. Figure 3 shows the thermal profiles at various stages of the coating process. The part temperature history can also be recorded and archived for future audit purposes.

The new Air Products’ patent-pending, thermal spray cooling technology (Figure 4) is the industry’s only cryogenic nitrogen cooling process. It has provided productivity benefits in a range of HVOF coating applications, involving aerospace parts, construction equipment, and rolls. Nitrogen cooling has also been proven to be an effective and economical solution for heat-intensive spraying processes (high pressure liquid fuel HVOF systems and high spray rates). The use of cryogenic vapor as a supplement to existing air cooling and variation of cooling intensity with heat input helps ensure the most economical use of the cryogenic coolant. Cryogenic vapor cooling has also provided important part quality benefits, like preservation of substrate properties, minimized coating oxidation and reduced residual stress gradient between the coating and the substrate.

![Figure 2: Effects of cooling on silicone-based masking tapes during HVOF spray](image)
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Figure 3: Thermal profiles at various stages in the coating process, showing effective temperature control of the coated surface with cryogenic cooling

(a) Start of spraying pass

(b) End of spraying pass

Figure 4: Air Products Nitrogen Spray Cooling System
Air Products’ cryogenic spray nozzle installs easily on any thermal spray gun to help cool parts twice as fast as air cooling alone, which allows thermal spray operators to work faster and more efficiently with less wasted powder, process gas, and booth time.

For more information, contact Air Products and Chemicals, Inc., 7201 Hamilton Boulevard, Allentown, PA 18195, USA Tel 800-654-4567, code 557, Fax 800-272-4449, email gigmrktg@airproducts.com, web www.airproducts.com/metals

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Interviewing The Manipulator, The Job Description

Third in a Series from Plasma Powders and Systems

“The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency”. Bill Gates

Before “hiring” a manipulator, we need to fully understand what is expected of it; how will it add to productivity; what is the job description?
What will the manipulator control; the gun, the workpiece or will a manipulator be required for both?

In the majority of thermal spray applications, the manipulator controls the gun. The piece being sprayed is fixed, mounted to a turntable or mounted to a lathe. The primary question is where will the system fit within the production operation?

In one application, where the welded end-pipe on truck mufflers needed an electric arc coating, it initially appeared that the manipulator should control the gun. However, when the production operations were considered, it turned out to be best to use a robot to pick the fabricated mufflers off of the production line and poke the muffler end through an opening where a fixed arc gun coated the weld area. The robot rotated the muffler during the coating operation.

In another application, hydroxylapatite is applied to small medical implants. This application uses a robot to pick an implant from a tray and position it in front of a fixed plasma gun. The arrangement and tooling insured that the robot did

continued on page 10
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not become coated during the operations.

Another unique application is where two robots are used for coating aerospace parts; one controls the plasma gun while the second controls the part during the coating operation. Again, the robot programming had to take into consideration the direction of spray to avoid coating of the part handling robot.

In all of these cases, the application is very specific. These systems would generally not be suitable for a thermal spray job shop.

**What is the weight to be manipulated?**

The weight to be manipulated needs to include not only the gun but a portion of the weight of the connecting hoses, mounting fixture, cables and sensors. One robotic system for coating a weld zone in large hydro turbines required a HVOF gun mounted on a three-foot extension to allow coating between the blades. The robot had to be sized to handle the weight of the cantilevered gun, gun extension, hoses and cables.

Some production shops use one robot for a variety of guns. Each gun is attached to keyed quick-disconnect mounting half with the mating half on the robot. This not only allows for rapid changeover of the gun but also precise positioning of the gun on the robot. The weight of the quick-disconnect needed to be included in the manipulator payload requirements.

**What motion is required?**

Roll coating shops often use only a single-axis gun controller that traverses along a lathe. Many job-shops require only a two-axis manipulator that provides an X-Y motion in front of a turntable with a fixed standoff. For coating of complex shapes, especially where the part to be coated is fixed, a five- or six-axis robot is usually required.

**What range of motion is required?**

Not only is it necessary to consider the size of the largest area to be coated, it is also necessary to consider what range of motion will be required for the thermal spray operations. For example, a robot for coating the face and cheeks of steel rolls will need to extend well past the face of the roll. In this case, a drawing of the robot in the extreme coating positions was needed to verify suitability.

**What speeds will be required?**

Manipulator speed is generally not of major concern when coating of parts mounted on a turntable or lathe. The surface speed needed for coating is achieved by the speed of the turntable. Speed capability of the manipulator becomes a significant factor when the part to be coated is fixed, especially when HVOF coating is applied. In such cases, robot speeds up to 275 ftm may be required. Such speeds are possible with present day robots but safety becomes a major issue to insure that no one is around the robot during high speed motions.

**Next time, The Qualifications of the Manipulator.**

For more information, contact series author, Dale Moody via email dalermoody@aol.com
Thermal Spray Pavilion Tremendous Success

The first International Thermal Spray Association (ITSA) Thermal Spray Pavilion at the 2007 Fabtech International and AWS Welding Show was extremely successful. The crowds were huge, the questions never-ending, and the 27 pavilion exhibitors had numerous opportunities to educate attendees on thermal spray processes and benefits.

The Show hit record breaking attendance. 31,354 people came through the doors at McCormick Place. The show covered more than 481,427 net sq ft of floor space, utilized by another record setting 1004 exhibitors.

Attendees come from all corners of the world - This year’s show was comprised of 89.5% domestic visitors, 4.4% from Canada and 6.1% international. Within the U.S., the largest draw of attendees came from IL, IN, IA, MI, OH, WI, MN, PA, TN and CA. Of the 6.1% of international visitors, the largest number traveled from Mexico, Columbia, Japan, Brazil, Italy, China, India, Venezuela, France and the United Kingdom.

The event keeps growing to address the needs of all types of contract manufacturers and OEMs, including the addition of 27 companies exhibiting in the Thermal Spray Pavilion. “The Thermal Spray Pavilion at the FABTECH International & AWS Welding Show was a tremendous success,” said Marc Froning, chairman, International Thermal Spray Association (ITSA) and manager of Engineering & Development for BASF Surface Technologies. “The Pavilion area was highlighted very well and the traffic was continuous. It was the perfect opportunity to illustrate the benefits of coatings.”

Audience Profile - A variety of job functions were represented at the show including 29% being corporate executive/top-level management or Job Shop Owner, 19% manufacturing engineers or product design & development and 14% with titles of manufacturing production.

Role in Buying - Attendees came to the show to not only view but to purchase a range of forming, fabricating and welding equipment. 80% of the visitors who attended the show indicated that they are involved in some way in their company’s purchasing plans.

In 2008, the Fabtech International & AWS Welding Show is heading to Las Vegas, October 6-8, to put your company in front of thousands of prospective west coast buyers. Limited exhibit space is still available, with over 90% of the show floor at
the Las Vegas Convention Center already sold.

To reserve booth space in the ITSA Thermal Spray Pavilion, please contact Joe Krall, Director of Exposition Sales via email jkrall@aws.org or via phone 800.443.9353, extension 297.

For event information, visit www.aws.org/expo or www.fmafabtech.com or www.sme.org

See advertisement page 13.

The International Thermal Spray Association booth highlighted a Pratt and Whitney Canada PW300 Turbofan cut-a-way engine. This is one of the industry’s signature turbofan engines in the mid-size jet market. Thousands of attendees came by to see the PW300 engine which proved to be a valuable educational tool for thermal spray as 50% of engine parts are thermal sprayed.


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713.921.0012  
Mr. Jim Hollingsworth, jimh@schumachercoinc.com

**Superior Shot Peening, Inc.** - Houston, TX USA  
www.superiorshotpeening.com  281.449.6559  
Mr. Albert Johnson, ajssp@aol.com

**Surface Modification Systems** - Santa Fe Springs, CA USA  
www.surfacemodificationsystems.com  562.946.7472  
Dr. Rajan Bamola, rajanb@srfacemodificationsystems.com

**Thermal Spray Technologies, Inc.** - Sun Prairie, WI USA  
www.tstcoatings.com  608.825.2772  
Mr. Bill Lenling, blenling@tstcoatings.com

**United Surface Technologies** - Altona, Melbourne Australia  
61.393.98.5925  
Mr. Keith Moore, kmoore@ust.com.au

**Supplier Member Companies**

**3M Abrasive Systems Division** - St. Paul, MN USA  
www.mmm.com  800.362.3550 or 651.736.5459  
Mr. Troy Heuermann, twheuermann1@mmm.com

**Action Super Abrasive** - Brimfield, OH USA  
www.actionsuper.com  800.544.5461  
Mr. Cliff Lessnau, lessnau@actionsuper.com

**Air Products and Chemicals** - Allentown, PA USA  
www.airproducts.com/metals  800.654.4567  
Mr. Stewart Stringer, stringsr@airproducts.com

**Alloy Sales** - Delta, BC Canada  
www.alloysales.com  604.940.9930  
Mr. Lloyd Johanesen, lloyd@alloysales.com

**AMETEK, Inc.** - Eighty-Four, PA USA  
www.ametekmetals.com  724.250.5182  
Mr. Richard Mason, dick.mason@ametek.com

**Ardleigh Minerals, Inc.** - Shaker Heights, OH 44122 USA  
www.ardleigh.net  216.921.6500  
Mr. Ernie Petrey, epetrey@ardleigh.net

**Bay State Surface Technologies, Inc.** - Millbury, MA USA  
www.aimtek.com/baystate  508.832.5035  
Mr. Jay Kapur, jkapur@aimtek.com

**Carpenter Powder Products** - Pittsburgh, PA USA  
www.carpenterpowder.com  412.257.5102  
Mr. Chip Arata, warata@cartech.com

**Centerline Windsor Limited** - Windsor, ON Canada  
www.supersonicspray.com  519.734.8464  
Mr. Julio Villafuerte, julio.villafuerte@cntrline.com

**Climax Engineered Materials** - Sahuarita, AZ USA  
www.climaxengineeredmaterials.com  520.806.8759,  
Mr. Matthew DeLuca, mdeluca@phelpsdodge.com

**Deloro Stellite Company, Inc.** - Goshen, IN USA  
www.stellite.com  574.534.8631  
Mr. David A. Lee, dlee@stellitecoatings.com

**Donaldson Company, Inc.** - Minneapolis, MN USA  
www.donaldson.com/en/industrialair  800.365.1331  
Ms. Lori Lehner, llehner@mail.donaldson.com

**Farr APC** - Jonesboro, AR USA  
www.farrapc.com  800.479.6801  
Mr. Lee Morgan, morganl@farrapc.com
Spraytime, Fourth Quarter 2007

15 Year Anniversary

17

Spraytime - thermal spray industry newsletter has reached a circulation of over 7,000 copies. This is an increase of 17% over last year. To view the distribution quantities by zip code areas, please see page 31.

For more information, contact the International Thermal Spray Association via email itsa@thermalspray.org

Creative Thermal Spray Coating Solutions
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www.NationCoatingSystems.com
NanoSteel Named One of 15 “Companies to Watch” by Advanced Materials & Processes Magazine

The NanoSteel Company, an industry leading producer of nano-structured steel alloys for industrial applications, announces that it is one of 15 winners in Advanced Materials & Processes (AM&P) magazine’s “Companies to Watch in Materials Science and Engineering” competition which recognizes exceptional contributors to innovation in the materials industry in a feature article in the July 2007 issue.

NanoSteel was selected by AM&P because its patented Super Hard Steel (SHS) iron-based alloy technology, the cornerstone of the company’s thermal spray and weld overlay coating products. These innovative materials are unique in their ability to form extremely refined property-enhancing, nanometer-sized grain structures that provide performance benchmarks well beyond conventional steels, nickel-based superalloys and a range of hard materials used to mitigate wear and corrosion in general industry.

“Recognition as an innovative company by AM&P magazine is a high honor for NanoSteel,” says Dave Paratore, president/CEO. “We are proud to be recognized for our efforts in advancing the technology and practical applications of iron-based alloys and continue to focus on using this technology to solve customer issues related to extending component life cycles.”

The NanoSteel Company, Inc., headquartered in Providence, R.I., develops and markets a range of patented Super Hard Steel nano-structured materials that can be applied with a variety of widely-available industrial processes, including thermal spraying, welding and laser cladding. NanoSteel’s proprietary alloys cost-effectively solve or alleviate many of the problems that have a destructive or costly impact on industry today, including wear, corrosion, erosion and high temperature oxidation.

For more information, visit www.nanosteello.com

CenterLine-SST Receives NRC-IRAP Support for Cold Spray Research

CenterLine (Windsor) Ltd. and its newly created Division, Supersonic Spray Technologies (SST) in Windsor, Ontario, Canada, is pleased to announce that it has received research funding from the National Research Council of Canada, Industrial Research Assistance Program (NRC-IRAP). Subject to the terms of the agreement, CenterLine (Windsor) Ltd. will receive approximately $200,000 over one year in support of CenterLine’s internal research and development expenses related to key aspects of CenterLine’s low-pressure cold spray technology.

Dr. Julio Villafuerte, head of research and development at CenterLine, says that “the NRC-IRAP support represents a significant milestone as the company endeavours to reach new markets by creating innovative products, processes, and services”. CenterLine is a leader in welding and joining for the automotive and mass transportation industries. Working directly with CenterLine, NRC-IRAP will provide a range of both technical and business-oriented advisory services, along with financial support to help the enterprise grow.

CenterLine (Windsor) Ltd. created the SST Division in 2003 to develop and commercialize low-pressure cold spray equipment. The low-pressure cold spray technology was invented in Russia in the 1980s; it is a solid-state, low-temperature spraying process, in which the spray powder is accelerated to supersonic velocities by an air or nitrogen supersonic jet. Upon impact with a substrate, the solid particles experience rapid plastic deformation that disrupts oxide films while promoting bonding. Low-pressure cold spray is capable of providing corrosion protection, dimensional restoration, metallization of ceramics, and other applications, without the undesirable effects of elevated process temperatures such as oxidation, tensile residual stresses, and/or metallurgical transformations.

For more information, please contact Julio Villafuerte, Centerline Windsor SST, email julio.villafuerte@cntrline.com or visit website www.supersonicsspray.com
American Welding Society Acquires Weldmex – Largest Welding Trade Show in Mexico

The American Welding Society (AWS) announced today that it has entered into an agreement with Trade Show Consulting (TSC) to purchase Weldmex, the largest welding trade show in Latin America. TSC is a trade show and conference production company which specializes in launching manufacturing shows throughout the U.S. and Mexico. AWS is the world’s largest nonprofit organization dedicated to advancing the science, technology and application of welding.

Under the terms of the agreement, AWS will maintain primary ownership of Weldmex, and assumes the rights to organize, promote, produce and manage Weldmex under the new name, AWS Weldmex. In addition, TSC will continue to provide support services in the production, marketing and management of the show.

“We are very pleased to join Mexico’s premier welding event and expand AWS further into the Latin American market,” said Ray Shook, AWS Executive Director. “Mexico’s welding and fabrication industries have experienced impressive growth and the country remains an important trading partner with North America. We believe that AWS Weldmex will broaden AWS’ reach and provide exciting additional benefits and opportunities to our more than 50,000 members.”

The annual AWS Weldmex event attracts more than 5,000 welding equipment users, manufacturers and suppliers from Mexico, Central America and the United States. Currently in its fifth year, AWS Weldmex is scheduled to take place on January 29-31, 2008, at the new Centro Banamex in Mexico City. Categories of equipment, processes and accessories to be exhibited at AWS Weldmex 2008 include a variety of arc welding products, plus brazing, punching, bending, resistance welding, robotics, industrial gases, laser cutting and welding, soldering, tubing and piping, plasma cutting, and stamping.

For more information on exhibiting at AWS Weldmex 2008, please contact AWS exhibition sales director Joe Krall at 800-433-9353, ext. 297 or jkrall@aws.org.

The American Welding Society (AWS) was founded in 1919 as a multifaceted, non-profit organization with a mission to advance the science, technology and application of welding and allied joining and cutting processes, including brazing, soldering, and thermal spraying. Headquartered in Miami, Florida, and led by a volunteer organization of officers and directors, AWS serves more than 50,000 members worldwide and is composed of 22 districts with 250 sections and student chapters. For more information on AWS, visit www.aws.org

WHERE IS YOUR ARTICLE?
You and your company have the opportunity to help design the content of your thermal spray community newsletter. The SPRAYTIME Editorial Staff encourages and welcomes your contribution.

HELP WANTED
Sr. Process Engineer - Pilot Projects

Sulzer Metco is searching for an engineer with at least 5 yrs. of experience in manufacturing, preferably in a powder environment for a high-visibility position that requires a hands-on attitude and can work with minimal supervision in order to develop, qualify, implement, and control production processes. Requires interfacing with various departments to develop technologies that eventually translate into production results. Knowledgeable with spray drying, sintering, and feedstock material. BS degree in Metallurgical Engineering or Materials Science, with training in Lean, 6 Sigma. Demonstrated achievements in accomplishing process improvements. Well versed in application of statistics, DOE & SPC techniques, and Minitab software. Good communications skills.

Please forward your resume and salary expectations to meg.meyer@sulzer.com or fax to 516.338.2296.

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WHERE IS YOUR ARTICLE?
You and your company have the opportunity to help design the content of your thermal spray community newsletter. The SPRAYTIME Editorial Staff encourages and welcomes your contribution.

15 Year Anniversary - SPRAYTIME Fourth Quarter 2007
Ardleigh can ship all of your recyclable materials on one truck, at one time.

Ardleigh Minerals’ Thermacycle™ process enables complete recycling of dust collector filters, tape and other mask materials. Ardleigh accepts a broad range of materials for recycling including:

- Blast media (aluminum oxide, silicon carbide, glass, plastic and shot)
- Metal chips, solids, grindings and turnings
- Metal containing by-products from thermal spray, plasma spray and HVOF—including powders and dusts, solids, sludges and cakes containing chromium, cobalt, copper, indium, molybdenum, nickel and tungsten, as well as mixtures of these.

Ardleigh Minerals actively works with all State and Federal environmental regulatory agencies to clarify any issues.

Corporate offices are located in Shaker Heights, OH. Facilities are located in Cleveland, OH, Augusta, GA. and Houston, TX. to serve customers’ needs.

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### SPRAYDUCO

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<thead>
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**Instructions for completions of SPRAYDUCO puzzle:**

Use logic along with the process of elimination to fill in a spray parameter in each blank cell. Parameters (9 total) can appear only once in each column, row or 3X3 block. For example, the blank cell in the second row and the seventh column can only be “I” since an “I” already exists in the first and third rows, making this the only available cell for an “I” in the second row. The difficulty level ranges from novice (easiest) to Journeyman to Master (hardest). This one is novice.

**Spray Parameters**

- I = Current
- V = Voltage
- W = Power
- Ar = Argon
- He = Helium
- H = Hydrogen
- N₂ = Nitrogen
- C = Carrier
- X = Standoff

To receive a copy of the puzzle solution, send an email request to itsa@thermalspray.org

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**WHERE IS YOUR ARTICLE?**

You and your company have the opportunity to help design the content of your thermal spray community newsletter. The SPRAYTIME Editorial Staff encourages and welcomes your contribution. Send news and articles via email to spraytime@thermalspray.org
The Dutch Association for Thermal Spray Technology, VTS

by Will Herlaar, President

Dutch Association for Thermal Spray Technology.

In the Netherlands thermal spraying has been known since 1945 and certainly after the start of Metco in 1947, with their office along one of the famous canals in Amsterdam. Thereafter the number of applications increased and as a result the market grew.

It is said by some that there was already a small machine shop in Amsterdam using Metco E-type guns spraying Zn for corrosion protection as early as 1936! I could not trace that.

In 1970 some people got together and founded the Dutch Society for Flame Spray Technologies, VVV, which name was changed in the late 1980s into Thermal Spray Technologies, VTS. Membership is at present 16 companies of which 14 are job shops.

Metco dominated the Dutch thermal spray market for many years, but with the coming of the Internet, ease of travel and the sense of the Dutch to look for bargains others noticed the possibilities there too.

With large thermal spray facilities at KLM, Chromalloy Holland and DutchAero (formerly Philips) Holland is dense with plasma and HVOF systems as every member of VTS has at least one plasma and HVOF unit in operation. Some of them do prestigious projects, like coating the hydraulic plungers for the lock systems of the Panama Canal for instance. These were done in Holland.

We are therefore proud to be the host for ITSC 2008. To be held in our most southern city of Maastricht. A city founded by the Romans. It is famous for the EEC summits, but for us famous for its restaurants and sidewalk cafés.

As we did at the conference in 1980 (who was there?) in the Hague we once again will welcome you.

For more information, visit see www.dvs-ev.de/itsc2008

See ITSC 2008 article page 25.
### CALENDAR OF EVENTS

**JANUARY 2008**

<table>
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<th>Date</th>
<th>Location</th>
<th>Event Description</th>
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<tr>
<td>21-22</td>
<td>Lake Buena Vista, FL, USA</td>
<td>Engineered Surfaces for Aerospace &amp; Defense</td>
<td>contact ASM International tel: 440.338.5151, email <a href="mailto:customerservice@asminternational.org">customerservice@asminternational.org</a>, web: <a href="http://www.asminternational.org">www.asminternational.org</a></td>
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**27JAN-1FEB**

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<tr>
<td>Daytona Beach, FL, USA</td>
<td>32nd International Cocoa Beach Conference &amp; Expo on Advanced Ceramics &amp; Composites</td>
<td>contact Megan Mahan, tel: 614.794.5894, email: <a href="mailto:mmahan@ceramics.org">mmahan@ceramics.org</a>, web: <a href="http://www.ceramics.org/acc">www.ceramics.org/acc</a></td>
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**29-31**

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<tr>
<td>Mexico City, Mexico</td>
<td>Mexico Weldmex Show</td>
<td>contact Joe Krall, email: <a href="mailto:JoeKrall@aol.com">JoeKrall@aol.com</a>, tel: 1-800-443-9353 ext 297</td>
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**FEBRUARY 2008**

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<tr>
<td>11-13</td>
<td>Bangkok, Thailand</td>
<td>First SAMPE Asia Conference &amp; Exposition</td>
<td>contact Society for Advancement of Materials &amp; Process Engineering tel: 800.562.7360 or 626.331.0616, email: <a href="mailto:sampeibo@sampe.org">sampeibo@sampe.org</a>, web: <a href="http://www.sampe.org">www.sampe.org</a></td>
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<tr>
<td>14-16</td>
<td>New Delhi India</td>
<td>International Trade Fair Joining, Cutting, Surfacing</td>
<td>contact <a href="mailto:christina.kleinpass@messe-essen.de">christina.kleinpass@messe-essen.de</a>, tel: +49(0)201.7244.227, <a href="http://www.messe-essen.de">www.messe-essen.de</a></td>
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<tr>
<td>20-21</td>
<td>Tel Aviv and Haifa, Israel</td>
<td>48th Israel Annual Conference on Aerospace Sciences</td>
<td>contact Dan Knassim, tel: 972.3.6133340, ext 207, web: <a href="http://www.aeroconf.org.il">www.aeroconf.org.il</a></td>
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**MARCH 2008**

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<tr>
<td>9-13</td>
<td>New Orleans, LA, USA</td>
<td>137th TMS Annual Meeting &amp; Exhibition TMS 2008</td>
<td>contact TMS tel: 724.776.9000, ext. 243, email <a href="mailto:mtgserv@tms.org">mtgserv@tms.org</a>, web: <a href="http://www.tms.org">www.tms.org</a></td>
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**24-28**

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<tr>
<td>San Francisco, CA, USA</td>
<td>MRS Spring Meeting &amp; Exhibit</td>
<td>contact tel: 724.779.3003, email: <a href="mailto:info@mrs.org">info@mrs.org</a>, web: <a href="http://www.mrs.org">www.mrs.org</a></td>
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**APRIL 2008**

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<tr>
<td>9-12</td>
<td>Osaka, Japan</td>
<td>Japan Int’l Welding Show - contact Sanpo Publications</td>
<td>tel: 81.3.3258-6411, email: <a href="mailto:hotani@sanpo-pub.co.jp">hotani@sanpo-pub.co.jp</a></td>
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**MAY 2008**

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<tr>
<td>26-28</td>
<td>Buenos Aires, Argentina</td>
<td>International Conference on New Developments in Metallurgy &amp; Applications of High Strength Steels</td>
<td>visit <a href="http://www.steelconfbsas08.com">www.steelconfbsas08.com</a></td>
</tr>
<tr>
<td>27-30</td>
<td>Moscow, Russia</td>
<td>Int’l Trade Fair Joining, Cutting, Surfacing</td>
<td>Mr. Claus-Peter Regiani, email: <a href="mailto:cp.regiani@messe-essen.de">cp.regiani@messe-essen.de</a>, web: <a href="http://www.schweissen-schneiden-russia.com">www.schweissen-schneiden-russia.com</a></td>
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**JUNE 2008**

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<tr>
<td>8-12</td>
<td>Washington, DC, USA</td>
<td>World Congress on Powder Metallurgy &amp; Particulate Materials</td>
<td>email: <a href="mailto:info@mpif.org">info@mpif.org</a>, web <a href="http://www.mpif.org">www.mpif.org</a></td>
</tr>
<tr>
<td>9-12</td>
<td>Chongqing, China</td>
<td>MRS International Materials Research Conference</td>
<td>contact tel: 724.779.3003, web: <a href="http://www.mrs.org">www.mrs.org</a></td>
</tr>
<tr>
<td>9-13</td>
<td>Berlin, Germany</td>
<td>ASME Turbo Expo 2008</td>
<td>visit <a href="http://www.turboexpo.org">www.turboexpo.org</a></td>
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</table>
Is Your Event Listed?
Send your event notice to spraytime@thermalspray.org

CALENDAR OF EVENTS

SEPTEMBER 2008
14-18 Champion, PA USA 11th Int'l Symposium on Superalloys (Superalloys 2008) - contact TMS tel: 724.776.9000 x 243, email: mtgsvr@tms.org, web: www.tms.org
29 SEP-1 OCT Mannheim, Germany EuroPM2008 Int'l Conference - contact European Powder Metallurgy, tel: +44(0)1743.248899, web: www.epma.com

OCTOBER 2008
6-9 Pittsburgh, PA USA Materials Science & Technology 2008 Conference & Exhibition (MS&T08) - organized by ASM, ACRs, AIST, and TMS tel: 440.338.5151 ext.0 email: customerservice@asminternational.org, web: www.asminternational.org
29-30 Paris, France Industrial Gas Turbine O&M Conference - contact Ruth Martin, tel: +44 207 932 5587, email ruth@gasturbine-events.com

DECEMBER 2008
1-5 Boston, MA USA 2008 MRS Fall Meeting & Exhibit - contact MRS tel: 724.779.3003, email: info@mrs.org, web: www.mrs.org
7-10 Bangkok, Thailand PMP-III 3rd Int'l Conference on Processing Materials for Properties - contact TMS tel: 724.776.9000, email: mtgsvr@tms.org, web: www.tms.org

MAY 2009
3-6 Helsingør Denmark 15th Int'l Conference on the Joining of Materials - contact: JOM tel: +45.48355458, email: jom_aws@post10.tele.dk

JULY 2009
12-17 Ottawa, Ontario Canada 12th Int'l Conference on Fracture (ICF12) - visit www.icf12.com

SEPTEMBER 2009
14-19 Essen, Germany International Trade Fair - Joining, Cutting, and Surfacing - visit web: www.messe-essen.de, contact email: christina.kleinpass@messe-essen.de

WHERE IS YOUR ARTICLE?
Where is Your Employee Announcement?
You and your company have the opportunity to help design the content of your thermal spray community newsletter. The SPRAYTIME Editorial Staff encourages and welcomes your contribution.
Send news and articles via email to spraytime@thermalspray.org
Lineage Alloys Celebrates 10th Anniversary

On November 10, 2007, Lineage Alloys celebrated its 10th Anniversary with a party for the employees. Thermal spray powders have been produced on the plant site at Lineage Alloys, Baytown, Texas for more than 40 years. On November 10, 1997, Lineage Alloys started production under the new name and ownership. Even though the name of the company changed, the employees remained and brought with them their expertise which has been an added asset to Lineage Alloys.

Lineage Alloys started with just the buildings and equipment left by the previous owners. Through many long months of hard work, these employees, under the leadership of Ray Selby and Simon Poon, started production and were able to secure Pratt Whitney approvals on their aircraft powders.

In 1999, Gordon Jones, formally with Alloys International, joined Lineage Alloys as their production manager. During this time, Lineage Alloys achieved ISO certification due to a total commitment to quality control under the direction of Robert Jennings, quality control manager.

During 2000 and 2001, Ray Selby retired and Simon Poon left to pursue other business ventures. At this time Gordon Jones was appointed as general manager. David Dugas, also a former employee of Alloys International, joined Lineage Alloys as sales manager. The other original employees of Lineage Alloys are still with the company as well as additional employees who were added through the years to maintain our high demand for our thermal spray powders and our high expectations.

We at Lineage Alloys will continue to be a world class supplier and manufacturer of thermal spray powders to the coating and aircraft industries. We look forward to continuing to serve our loyal customers and look forward to adding new customers to our family. Our goal is to meet the customer’s needs with quality powder and on time delivery.

For more information, visit www.lineagealloys.com

See advertisement page 23.

Plasmatec Inc. is ISO 9001:2000 Certified

Plasmatec Inc. has achieved ISO 9001:2000 accreditation from SGS, the internationally recognized leader which provides certification services.

Plasmatec Inc. has always strived to maintain an open channel of communication with its clients. Listening to our clients, tracking customers’ satisfaction and supplying them with high quality services and products have been long time commitments for Plasmatec Inc. The ISO 9001:2000 is the formal statement of our policy and guidelines.

Not only does the certification testify to our customer’s related concern and culture of excellence, it also represents a milestone in our company.

As we focus on the North American market and explore new (overseas) markets, the worldwide standard is the backbone of our growth and supports our objectives.

As a company, we were obliged to a stringent audit which required a global involvement of the entire Plasmatec team. Our processes have been scrutinized and evaluated to all levels which included management, shop employees, engineering and staff alike.

For each employee, it has been an outstanding opportunity to demonstrate our main concern to offer consistent quality in the services and products we supply to our customers.
Though, Plasmatec Inc has always integrated quality into its business system, the standard is not seen as a certificate on the wall.

Our ISO 9001:2000 certificate is the quality framework that our customers deserve and the testimony of our dedication to continuous process improvement and proficiency.

The Scope of registration is as follows: powder conception and manufacturing, thermal spray coating services, and distribution of thermal spray consumables.

Plasmatec Inc was established in 1985 and continues to supply powder, wires, masking tapes, and turnkey thermal spray systems through its distribution division. Notably the Plasmatec website www.plasmatec.com “STEALS & DEALS” section is now being recognized as the thermal spray industries equivalent to “E-bay” for selling or buying used equipment.

Since 2003, Plasmatec offers thermal spray coatings services including a complete metallurgical laboratory to quantify and qualify its own coatings. Since 2006, Plasmatec manufactures its own proprietary powders as well as commercially available products in the area of WC, Ni base, ceramics and abradable powders.

For more information, email info@plasmatec.com or visit www.plasmatec.com

Journal of Thermal Spray Technology®
A publication of the ASM Thermal Spray Society

Abstract: Low Thermal Conductivity Coatings for Gas Turbine Applications
N Markocsan, P Nylén, J Wigren, and X-H Li

Plasma spraying of thermal barrier coatings (TBCs) on gas turbine parts is widely used today either to enable higher-turbine inlet temperatures with consequent improvement of combustion efficiency or to reduce the requirements for the cooling system and increase component life-time. Development of low conductivity TBCs, which allows us to further increase gas turbine efficiency and availability, is an ongoing challenge. In order to get low thermal conductivity values an experimental program was conducted. Yttria partially stabilized zirconia (YPSZ) and dysprosia partially stabilized zirconia (DyPSZ) were used to study the influence of power input in the plasma torch and powder feed rate on coating properties. Microstructure evaluations were performed to evaluate the influence of the spraying parameters on the coating morphology and porosity level. Laser Flash (LF) and Transient Plane Source (TPS) methods were utilized to evaluate the coatings thermal conductivity and a comparison between the two methods conducted as well as a correlation study between coating microstructure/composition and thermal conductivity (TC).

Read the entire article in the December 2007
Journal of Thermal Spray Technology.

For more information, visit www.asminternational.org/tss
Editor: Christian Moreau
Associate Editors: Kendall Hollis, Seiji Kuroda, Lech Pawlowski, and Armelle Vardelle

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.

Thermal Spray Crossing Borders
Maastricht, The Netherlands
June 2 - 4, 2008
ITSC 2008, the worldwide leading conference of thermal spray, returns to Europe. ITSC is an opportunity for the global thermal spray community to meet, exchange information and conduct business.

This outstanding annual event in the world of thermal spray technology is jointly organized by the German Welding Society (DVS), the ASM Thermal Spray Society (ASM TSS), and the International Institute of Welding (IIW).

ITSC 2008 follows the successful path of the previous events in Basel (2005), Seattle (2006) and Beijing (2007). It presents the latest status of application, research and development in the field of thermal spray.

Maastricht is a bustling town of some 180,000 inhabitants. Its twice-weekly market and busy shops attract customers from Belgium and Germany and it draws numerous tourists and businessmen. Current policies emphasize Maastricht's central location in Europe and its European image. In 1981 and 1991 the city hosted the summit meeting of the European Community heads of state. The creation of the “Euregio” area, centered on the cities of Aachen, Liege and Maastricht, is a sign that Maastricht is returning to the central European location it occupied during the reign of Charlemagne.

ITSC 2008 will take place at the MECC Maastricht Congress Centre. MECC Maastricht is a state-of-the-art conference and exhibition center constructed according to the “fourth-generation” concept. Visitors can attend ITSC 2008, dine, and also sleep there. Everything is under one roof.

For more information, please visit www.dvs-ev.de/itsc2008
See Dutch Association article page 21.
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.

Officers
Chairman: Marc Froning, BASF Catalysts LLC
Vice-Chairman: Dan Hayden, Hayden Corporation
Treasurer: Bill Mosier, Polymet Corporation
Executive Committee (above officers plus)
Corporate Secretary: Kathy Dusa
Past Chairman: Ed Simonds, Cincinnati Thermal Spray, Inc.
6-Year Term: John Read, National Coating Technologies
4-Year Term: Scott R. Goodspeed, H. C. Starck, Inc.
2-Year Term: John Hayden, Hayden Corporation

ITSA Scholarship Opportunities
The International Thermal Spray Association offers annual Graduate and Undergraduate 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 Materials Camp Student Sponsor
Commencing in 2001, the International Thermal Spray Association provides an annual $1,500 student scholarship to the ASM International Foundation Materials Camp.

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.

For a free SPRAYTIME subscription, visit www.spraytime.org and complete the short questionnaire.

ITSA Headquarters
208 Third Street, Fairport Harbor, Ohio 44077 USA
tel: 440.357.5400 fax: 440.357.5430
itsa@thermalspray.org www.thermalspray.org

NEW SPRAYTIME®--Letters To The Editor WRITE US!

SPRAYTIME solicits letters to the Editor for publication in our new column. Letters are solicited that comment on a recent SPRAYTIME article, on a topic of general interest to the thermal spray industry, on a recent event in the industry, or on a recently published letter to the editor.

Send your letter to SPRAYTIME by e-mail to spraytime@thermalspray.org or via fax to 440.357.5430; electronic submissions as a Word document are preferred. Letters must be signed and must give the author's name, affiliation, and phone or e-mail address. The author's name will be published. Letters of fewer than 300 words will be given preference. Longer letters may be abridged by the editor. Please give the headline and issue number if referring to a specific article previously published.

The editor reserves the right to select letters for publication, and due to space and time limitations not all letters will be published nor acknowledged. If you have any questions please contact SPRAYTIME via email spraytime@thermalspray.org, or via phone 440.357.5400.
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, in every issue of SPRAYTIME, as well as in our free edition of "What Is Thermal Spray?". ITSA members also receive an additional 10% advertising discount 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 International and AWS Welding Show Thermal Spray Pavilion, Marine Coatings & Corrosion Conference MegaRust Show, Weldmex Mexico, and TurboExpo in 2008).

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 our membership chairman Jim Ryan at james.ryan@hcstarck.com or visit the membership section of our www.thermalspray.org website.

International Thermal Spray Association Welcomes New Members

Ardleigh Minerals, Inc. has joined the International Thermal Spray Association. Ardleigh Minerals is a recycler and supplier of raw materials for the metallurgical, ceramic, cement and agricultural industries.

Since its inception, Ardleigh Minerals has found its niche by providing one-stop-recycling services for producers of by-product, off-specification, and obsolete materials.

As a supplier, Ardleigh Minerals provides manufactured or application-enhanced materials. Enhanced-manufacturing value can include anything from a physical change in the product to a delivery system change such as bulk to package.

Enhanced-application value is obtained by developing new and unique uses for these materials. Thermal Spray includes: alumina, blast media, filters, flashing, grinding swarf, grinding wheels, maskant, metal chips/grindings/turnings, nozzles, plastic bottles, and shields.

Thermal spray, plasma spray and HVOF powders and dust collector fines include materials and mixtures containing cobalt, copper, indium, molybdenum, nickel, and tungsten. Ardleigh Minerals actively works with state environmental regulatory agencies to clarify all issues related to characteristic hazardous wastes being classified as nonhazardous materials when recycled. See advertisement page 20.

For more information, contact ITSA company representative Ernie Petrey email epetrey@ardleigh.net, tel: 216-921-6500, web: www.ardleigh.net

See advertisement page 20.

PM Recovery, Inc. has joined the International Thermal Spray Association.

Serving industry professionally, personally, dependably, preserving the environment with integrity. PM Recovery has developed a unique expertise in handling the reclamations, recycling and final disposition of secondary materials. We take pride in environmental responsibility matched with aggressive commercial terms. We make sure you are covered… And the environment is undisturbed.

Principally engaged in the purchase and processing of nonferrous/specialty metals PM Recovery is uniquely positioned to provide generators of industrial secondary materials with environmentally responsible direct material handling of nickel, cobalt, tungsten, molybdenum and all associated alloys. PM Recovery handles solids, turnings, grindings, sludges, mixed and co-mingled materials. Additionally we purchase ferro alloys, copper, zinc and vanadium-bearing materials.

PM Recovery New Castle specializes in the processing of various forms of nonferrous, high temperature and base metal scrap materials including solids, grindings, sludges, residues, mill scale, turnings, flue dusts, filter cakes, pond tailings, and spray coatings. By adding value to these residual materials through proprietary mechanical processing, we transform your scrap into intermediate products maximizing value while eliminating environmental liability.

PM Metals and Carbides processes all forms of “soft” and “hard” tungsten and tungsten carbide scrap. Solid shapes include mining compacts, dies, anvils, mill rolls, end mills, CB drills, tooling inserts, cutters, saw blades, saw teeth. Soft shapes processed include grindings, swarf, powders, sweeps, sprays, turnings and mixed materials.

PM Recovery Austria provides recycling coverage and environmental services to industry throughout Europe, Asia, the Middle East and the African Continent.

For more information, contact ITSA company representative Paul Sartor, email paul@pmrecovery.com, tel: 860.536.5396, web: www.pmrecovery.com
Wall Colmonoy Promotes Rick Rackley
Director of Quality

Rick Rackley has been promoted to the position of Director of Quality for the Wall Colmonoy (WCC) Aerospace Group. The WCC Aerospace Group is comprised of the Oklahoma City, Cincinnati, and Dayton, Ohio facilities.

Rick had 17 years experience in quality management, before joining the WCC team. He has been the Quality Manager/Safety Officer for the WCC Oklahoma City facility for the past seven years, and was instrumental in obtaining ISO 9001:2000 certification for that location.

WCC operates two FAA repair station facilities, and is a leading manufacturer in high-temperature, nickel-base brazing and coating alloys. For more information, visit www.wallcolmonoy.com.

FREE Linde Poster

The spray gun picture-poster depicts processes starting in 1910 through now including cold spray. Send a request with your mailing address to itsa@thermalspray.org

Thermal Spray Crossing Borders
Maastricht, The Netherlands
June 2 - 4, 2008

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For more information, please visit www.dvs-ev.de/itsc2008

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Neiser ASM International 2007 Fellow

In ASM’s 2007 Class of Fellows Dr. Richard Neiser was recognized “for pioneering contributions in innovative process diagnostics and modeling to enhance fundamental understanding and improve control technology for thermal spray processes, and for exceptional leadership in thermal spray safety education”. Dr. Neiser is currently manager of the Applied Systems and Materials Science Department in the Systems Assessment and Research Center at Sandia National Laboratories in Albuquerque, New Mexico.

Born and raised in Pittsburgh, PA, he received his Bachelors and Masters degrees in Materials Science & Engineering from Virginia Tech in Blacksburg, VA. Dr. Neiser performed his PhD studies at the State University of New York at Stony Brook, Long Island, NY. For six years he worked at Brookhaven National Laboratory on Long Island operating X-ray facilities for the Naval Research Laboratory and Oak Ridge National Laboratory. Upon completing his doctorate, Dr. Neiser received an Alexander von Humboldt fellowship to study in Germany and performed post-doctoral research at Aachen Technical University and at the University of the Federal Armed Forces in Hamburg. Moving to New Mexico in 1991, Dr. Neiser has worked at Sandia National Labs for the past sixteen years on a broad range of applied engineering projects in the area of national security. He is married and has three children.

The Dutch Thermal Spray Association, VTS, Appoints Will Herlaar as President

Will Herlaar, having served as a Marine Engineer in his younger years, worked for Smiweld, now Lincoln Electric, as export manager and joined Metco in 1985 as Director for Metco Nederland and Belgium. He was appointed Managing Director of Metco Uk Ltd in 1992. He left Metco after the merger with Sulzer to become Account Manager a few years later for Flame Spray Technologies in the Netherlands.

He is a member of the Programming Committee for ITSC 2008, which is going to be held in the Netherlands in June 2008

The Netherlands being host of ITSC 2008 in Maastricht certainly will find the spotlights of the Thermal Spray industry on them. The VTS will make sure that a warm welcome will be extended to all of you who will visit this event.

For more information, email W.Herlaar@fst.nl

Feedback control of particle temperature and velocity of flame-sprayed copper wire is challenging because of the low emissivity of copper and the need to keep the wire well-centered in the flame. This photograph of Rich Neiser looking at the flame illustrates how dim the copper particles are. It was found that gas flows to the torch could be dynamically adjusted to simultaneously hold both average particle temperature and velocity constant.

For more information, contact Rich Neiser at email raneise@sandia.gov

SPRAYTIME advertising rates available at www.spraytime.org

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Meet your efficiency goals with thermal spray solutions from Sulzer Metco.

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