SPRAYTIME®

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Art and Thermal Spray

Vermont artist Kathryn Lipke-Vigessa chose Bauer Art Metal to build her outdoor sculpture, a work commissioned by a large university. The centerpiece of her design was to be a large bronze seed, broken into three segments, into the center of which was to be planted a live tree.

Bauer Art Metal, a fabricating firm located in Waterbury, Vermont, is announcing that it has received a U.S. patent on a process it has developed to build free standing objects using thermal sprayed metals on wire mesh.

See page two for the seqence of photos showing the steps of construction from model to finish piece using the Bauer Art Metal patented process.

Figure 7. The three completed seed pods on site with a chemical patina finish.

May 14-16, 2007 Beijing, China
International Thermal Conference and Exposition

ITSC 2007 - The event, co-sponsored by the ASM Thermal Spray Society (TSS), the German Welding Society (DVS) and the International Institute of Welding (IIW), will be the first to be held in the vibrant country of China. The bustling automotive, aerospace and heavy equipment manufacturing sectors of China serve as an ideal forum for discussing the latest advances in thermal spray technologies.

ITSC 2007 is an opportunity for the global thermal spray community to meet, exchange information and conduct business. It is a truly unique opportunity to be part of an outstanding program in the fascinating city of Beijing, the cultural center of the People's Republic of China.

***For more information,* visit**
www.asminternational.org/itsc07

continued from page 1

The following sequence of photos shows the steps of construction from model to finish piece using a newly patented process.

Figure 1.

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 1. Three different seed segments were shaped by the artist in large blocks of white Styrofoam. The individual segments are approximately three feet tall.

Figure 2. Stainless steel skeletons were made for each of the three different shapes. These served as a structural support for the outside shell and a base plate for anchoring.

Figure 3. Copper mesh is shaped to the models; here, the back section is shown. The mesh is easily formed, often by hand, and can be cut and joined to accommodate any contour.

Figure 4. The front half of the seed is sprayed with zinc to solidify the shape taken from the model. The openings in the mesh readily accept the sprayed zinc. The mesh becomes encapsulated when sprayed from both sides, lending great strength to the shell.

Figure 5. The front and back sections are assembled and sprayed together on the skeleton. The seams will need minor grinding to disappear.

Figure 6. The final shape is touched up and lightly sandblasted, then sprayed with silicon bronze. It is then highlighted by polishing.

Figure 7. The three completed seed pods on site with a chemical patina finish. (see page 1)

With their new process, Bauer Art Metal was able to complete this project in less time and at about half of the cost of traditional foundry casting. They are using this system to fabricate a variety of architectural items including railings, fountains, lighting, metal tiles, and murals as well as sculptural artwork.

Bauer Art Metal, a fabricating firm located in Waterbury, Vermont, has received a U.S. patent on this process to build free standing objects using thermal sprayed metals on wire mesh.

Bauer was founded by Eric C. Bauer who has been involved in architectural metalworking for 35 years. Their new process is the result of extensive experimentation with wire-arc thermal spray on a variety of substrates. Bauer has used this process to fabricate many different items ranging from bronze bowls, art murals, tiles and signage, to large outdoor sculpture. In general, the process compares very favorably to traditional foundry and fabrication methods in price and production time. Additionally, the versatility of electric arc thermal spray allows the use of almost any metal.

Bauer is currently utilizing their process in its custom architectural work as well as products designed for the consumer market.

For more information, contact Eric Bauer, tel: 802.244.4002, email: ecb@bauerfab.com, website www.bauerartmetal.com.

APPLICATION HIGHLIGHT

SPRAYTIME®

Published by
International Thermal Spray Association

Mission: To be the flagship thermal spray industry newsletter providing company, event, people, product, research, and membership news of interest to industrial leaders, engineers, researchers, scholars, policy-makers, and the public thermal spray community.

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Subscription to *SPRAYTIME*® is free for qualified individuals interested in the thermal spray industry. *Visit www.spraytime.org to subscribe.*

INDUSTRY NEWS

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INDUSTRY NEWS

TLS Sells Wear Plate Technology License

TLS Gotek™ Composites have gained such an excellent reputation that a US company has acquired the license to produce and promote the TLS Wear Plates. Amongst others, the TLS technology will be applied to treat parts for cement and power plants.

Kennametal, Inc., a US-based company, is convinced by TLS wear plates and trusts in the future of this technology. In September 2006, the US company acquired the license from TLS to produce and promote the TLS wear plate technology in the US market. TLS produces the wear plates at its Gotek plant in Frankfurt and sells them under the Gotek Composites brand in Europe. Gotek composites are alloys for protection against heavy abrasive wear. The composites consist of semi-finished or finished parts forming the substrate, usually plates or flat bars, onto which antiwear alloy coatings, 0.08 to 0.3 in. (2 to 8 mm) thick, are deposited.

The protective layer consists of self-fluxing nickel based powder alloys and/or chromium and/or tungsten carbides which undergo a special surface treatment through sintering in a furnace under vacuum. The wear protection coating offers a wide range of applications; i.e., in industries such as cement and wood processing or in power plants.

For more information, contact TeroLab Surface via www.terolabsurface.com.

(Reprinted with permission from TeroLab Surface News)

ERW Expands Operations In Second Facility

ERW, Inc, manufacturer of thermal spray masking fixtures, disposable shields, and holding fixtures has recently expanded. Continued growth in all aspects of their business has allowed them to open a second facility. Dedicated to waterjet cutting and large part processing capabilities, the 10,000 sq. ft building is located a short distance from the Putnam, CT operation.

Waterjet capability has given the company options in material processing areas that they needed to expand in. Land-based gas turbine components and the heavier materials and thicknesses associated with them were a major consideration. Also, continued demand for various types of test coupons cut from aircraft alloys and component cut ups was an added incentive.

To meet the needs of their customers as well as the continued growth of their business, ERW elected to purchase a Flow International Waterjet System with the dynamic head. The dynamic head feature adjusts the kerf to the scrap side of the cutting path, allowing for near net cutting capability. This minimizes waste, eliminates added machining requirements in some situations, and also eliminates any heat-affected condition on the part. Additionally, any material; such as plastic, ceramic, metal, rubber, etc.; can be cut on the waterjet.

For more information, Inc. please visit our website at erwinc.com ***See ERW advertisment page 25.***

For a free copy of the "What Is Thermal Spray?" publication, send an email request to itsa@thermalspray.org

SPRAYTIME® Continues Industry News

The International Thermal Spray Association is pleased to announce that it will continue to provide *SPRAYTIME* free-of-charge to the thermal spray community. If you have been receiving *SPRAYTIME*, you will continue receiving *SPRAYTIME*. If you or your colleagues wish to sign up for a free subscription, visit www.spraytime.org.

SPRAYTIME will continue to grow by reaching across other industries (AWS, SAE, NACE, ASME, etc.) for pertinent information-sharing and additional readership.

As a result of this collaboration with other professional industries, open enrollment and expanded readership, we expect our circulation to increase significantly to 10,000 in this decade.

ITSA is proud of starting *SPRAYTIME* in 1992 and the future expansion plans for news and circulation.

60TH ANNIVERSARY
1947 - 2007
The International Thermal Spray Association
www.thermalspray.org

Turbocoating New Treatment for Combustor Baskets and Transition Pieces

By A. Scrivani

Thermal barrier coatings consist of a bond coat of MCrAlY alloy (where M means Ni, Co or a combination of both), that can be obtained by vacuum plasma spray (VPS) or low pressure plasma spray (LPPS), high velocity oxygen fuel (HVOF)or by air plasma spray (APS) and of a top coat of yttria partially stabilized zirconia generally deposited by air plasma spray. These coatings are applied on gas turbine and aeronautical engine components in order to improve their hot corrosion and oxidation resistance and their service life time through a reduction of the service temperature.

Turbocoating S.p.A. has been for 10 years been involved in the sector of surface treatments for gas turbine components. Turbocoating is a private company owned by Mr. Nelso Antolotti and led by Dr. Giunio Petrolini (Production Manager) and Dr. Andrea Scrivani (Technical Manager) and today employs 70 people. In the last two years Turbocoating has modified its organization, with the intention of increasing the customer service level. Now the organization is very flat with direct response of engineering to the customer needs. During these months Turbocoating also was involved in the implementation of lean manufacturing, which leads to a "cells layout" in order to increase production efficiency and to decrease TPT (throughput time). Since the beginning, Turbocoating R&D (led by Dr. Gabriele Rizzi) department has been very active with participation in EC-funded research projects, resulting in new processes some of which are patented.

Particularly over the last few years, new processes and equipment have been developed in order to meet customers' requirements. One of this processes is the TBC coating of combustor baskets and transition pieces.

In gas turbines, the first part in the gas path is surely an area which needs protection by means of TBCs. These components are usually made of a Ni-alloy sheet such as Hastelloy. The specifications of many OEMs require a TBC coating deposited by APS, both MCrAlY bond coat and ceramic YPSZ top coat.

The difficulties of coating these components are due to their shape and size. For example in the case of combustor baskets the wall of the component is a tube with protrusions called scoops. In the normal procedure the scoops are left uncoated or are assembled after having been coated separately. In the case of repaired baskets, it is necessary to remove the scoops from the basket, scrap them and replace them with new ones.

APPLICATION HIGHLIGHT

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

By means of the newly developed Turbocoating process, it is possible to coat the scoops and the basket when assembled. This is possible thanks to a new patented plasma spray torch, with more degrees of freedom with respect to the state-of-art plasma spray torches.

The photographs show how the coating is carried out and the results of the new process, with high uniformity of TBC thickness and quality in all the parts of the basket. The coating microstructure and properties fulfill the specification of many OEMs.

Likewise, a plasma spray torch has been developed for the TBC coating of transition pieces. In this case the main difficulty is the shape of the part that varies from a circular to a rectangular section. Here it is crucial to develop spray parameters which permit spraying the coating while varying the spray distance. For this reason a diagnostic device for the plasma jet has been used.

Today Turbocoating has set up a cell for production of this kind of part, where the operators are able to inspect visually the incoming parts, prepare the components by masking and blasting, coat the parts with TBC and, where necessary, chromium carbide, perform finishing by blasting and finally inspect the parts and ship. This leads to a reduction of the TPT and an increase of efficiency in answering customers' requirements.

For more information, contact A. Scrivani, email andreascrivani@turbocoating.it

Thermal Spray Pavilion Planned for 2007 Fabtech International and AWS Welding Show in Chicago

Mark your calendar now . . .

In collaboration with the American Welding Society (AWS), the Society of Manufacturing Engineers (SME), and the Fabricators and Manufacturers Association (FMA), The International Thermal Spray Association is proud to announce a **Thermal Spray Pavilion** at the ***Fabtech International & AWS Welding Show*** **November 11-14, 2007** at the McCormick Place in Chicago with an estimated attendance of 17,000.

ITSA is planning many exciting and innovative industrial presentations for all show attendees. We encourage you to start planning now to be part of this special exposition highlighting the thermal spray industry to the AWS, SME, and FMA attendees.

To reserve booth space in the Thermal Spray Pavilion for 2007, 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 and www.fmafabtech.com and www.sme.org/fabtech

Plasmatec Launches Overspray Recycling Program For Thermal Spray Industry

Plasmatec Inc.; a Montreal, Canada based company; has launched a recycling program of powder overspray for the thermal spray industry.

Due to environmental regulations, the majority of thermal spray facilities currently accumulate overspray as a result of using the powder or wire processes. This is done by using a dry dust collection system, such as a Farr Gold Series dust collector. This metallic and ceramic overspray is collected in metallic or plastic barrels for proper disposal. A reputable waste management company would typically be called for proper disposal of the barrels and their content.

Depending on the local legislation, this overspray which is in dry powder form can be considered hazardous waste. Whatever the case, proper disposal comes at a cost for the thermal spray company.

Plasmatec Inc. now offers a alternative solution where the thermal spray company will be paid for the collected over-spray. The recycling program is simple where all the logistics for transportation and overspray analysis is done by Plasmatec. For each pick up of overspay, an official recycling certificate is provided.

For more information on this program, please contact Shelby Hacala via e-mail at shelby@plasmatec.com or via telephone at 1-800-642-6695.

Plasmatec Inc services the thermal spray industry as a thermal spray coating provider, powder manufacture and consumable supplier. **See advertisment page 18.**

INDUSTRY NEWS

Blast Off 2 And *Safety Practices* FREE Publications

Everything you need to know about safe efficient blast cleaning, you can learn from these two great reference books by Clemco Industries which are available in English and Spanish.

The 144 page *Abrasive Blasting Safety Practices* includes general potential hazards, equipment and operation preparation, job site conditions, equipment set up/operation, and job site clean up.

The 171 page *Blast Off 2* includes process and applications, primary and secondary elements of a blasting system, special equipment for blast cleaning, and process education.

Both publications include a reference section.

To request a free copy, visit www.clemcoindustries.com

NEW Book - Thermal Spraying for Power Generation Components

by Authors Klaus Erich Schneider, Vladimir Belashchenko, Marian Dratwinski, Stephan Siegmann, and Alexander Zagorski

This 300 page hardcover book, published August 2006, includes thousands of patents addressing new coating types, new developments, and new chemical compositions.

Description: Sometimes coating is still considered as an "art". This book deals with questions that are essential for a good performance of this "art". Is there a given process stability? Is there an inherent process capabiality for a given specification which cannot be improved? What is the right preventitive maintenance strategy? Is there a chance to end up with coating process capabilities in the order of other manufacturing processes?

This book is not a pure scientific book. It is of most value for the engineer involved in design, processing and application of thermal spray coatings: to understand the capability and limitations of thermal spraying, to understand deposition efficiency (waste of powder), the importance of maintenance and spare parts for quick change over of worn equipment, to use off-line programming and real equipment in an optimum mix to end up with stable processes in production with the shortest development time and in the end, to achieve the final target in production - namely process stability at minimum total cost.

To purchase this book, visit www.wiley.com (includes content listing) or www.amazon.com

Scholarship Opportunities

Applications April 15 through June 30 ONLY

The International Thermal Spray Association will award up to two (2) Graduate scholarships worth $1,500.00 each to be awarded each calendar year and up to three (3) Undergraduate scholarships worth $500.00 each to be awarded each calendar year

Since 1991, the ITSA Scholarship Program has contributed to the growth of the Thermal Spray Community, especially the development of new technologists and engineers. The International Thermal Spray Association is very proud of this education partnership and encourages all eligible students to apply.

Scholarship applications are now accepted annually **April 15 through June 30 ONLY** for both the Graduate and Undergraduate scholarships.

For more information, please visit www.thermalspray.org scholarship area for details and a printable application form.

SUNY Creates Youth SPLAT Center

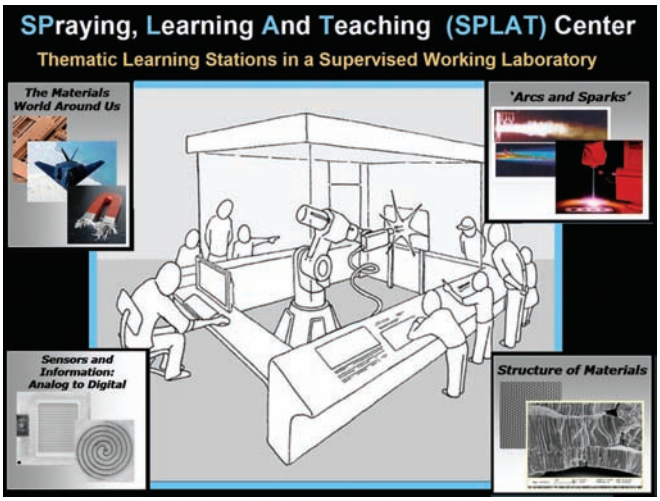
The State University of New York at Stony Brook has announced the creation of the SPLAT (Spraying, Learning and Teaching) Center, a specially designed "kid-friendly" interactive research laboratory. Demonstrations and hands-on experiments will be part of the immersive nature of this lab which will be housed in the new Center for Thermal Spray Research's (CTSR) building.

A critical goal of Center is the development of next generation materials researchers, engineers and scientists that are capable of providing guidance in the advancement of materials science and, in particular, thermal spray processing. Many of today's brightest students no longer choose science or engineering for their career paths, which is of great concern for our country's continued global technological leadership.

CTSR outreach philosophy is:

- Excite young people about engineering and science with activities that offer a high degree of sensory simulation. The "arcs and sparks" of thermal spray is extremely exciting and appealing to young students.
- Inspire young people with real-world relevance and historical significance and the future role that they can play.
- Connect them by relating their current education to the world around them.
- Sustain their intellectual growth with continuous support for both students and teachers while fostering an environment of "lifelong learning".

Hundreds of K-12 students have visited the CTSR over the past several years through informal visits to the spray lab and have been awed by the thermal spray process and enlightened by all of the industries impacted by it. The overwhelming response received by the teachers and students revealed a significant need to further build upon these initial interactions, hence the creation of the SPLAT Center.



The SPLAT Center is designed for teachers and students grade 3 -12 and will be filled with interactive teaching kiosks that allow exploration and discovery of a wide range of exciting and highly relevant engineering and scientific topics such as energy, manufacturing and transportation.

Field trips and week long summer camp programs are currently planned to begin in early 2007. Fees for all programs will be nominal and dormitory housing may be available for out-of-state high school students.

SUNY SPLAT Center Looking for Donations

Dear Friends of Thermal Spray,

The State University of New York at Stony Brook (SUNY) announces the development of their new SPLAT (SPraying, Learning And Teaching) Center, a science and engineering educational outreach initiative. We have received start up seed money from the National Science Foundation (NSF) to develop this for youths in grade K-12 to visit. We expect to attract several hundred kids and teachers in 2007 and anticipate reaching thousands a year within this decade. Our goal is to encourage bright, energetic students to continue their studies in science and engineering and even perhaps thermal spray technology!

I am in the process of setting up the stations and could use the support of the ITSA membership for donations of gently used computer equipment, tables, work tables, chairs, robots, spray equipment, booths, etc etc - items necessary for teaching.

We sincerely appreciate any effort on your part to help us make the SPLAT Center stronger. We are exploring the possibility of offering tax donation credits for donations.

For more information or corporate sponsorship opportunities, please contact Lysa Russo at lysa.russo@stonybrook.edu or phone 631.632.4567.

Stork Cellramic Signs Agreement With Coleman Labs

STORK Materials Technology

Anilox roll manufacturer, Stork Cellramic, Inc. a division of Stork Materials Technology, announces an agreement with Coleman Labs to offer Flexo Pro D3 Cream anilox roll cleaner. Flexo Pro D3 Cream is available through Stork Cellramic's web store at www.stork-source.com.

Flexo Pro D3 Cream is an innovative hybrid anilox cleaner that removes water, UV and solvent ink as well as water and UV coatings. It is inexpensive, non-toxic and biodegradable. In Beta site testing, customers were amazed with how well it cleaned for a daily cleaner, that it is easily rinsed off and its non-gritty texture as compared with other cream cleaners available on the market. The testing went so well several customers ordered the product on the spot.

According to David Lanska, Midwest Regional Sales Manager "We are excited to be able to offer such an effective cleaner that is non-hazardous and environmentally friendly."

For more information, please contact us at 800.545.7895 or email us at anilox.support@stork.com

June 4 San Diego, CA USA *Introduction to Thermal Spray Coating Processes at MegaRust 2007*, 1-4 pm - visit www.nstcenter.com to register

NEW NST Center Website

The new and improved National Surface Treatment Center (NST) website went live on Saturday, March 3rd - **www.nstcenter.com**

Although we realize this may cause some confusion for those who may have various bookmarks associated with the site, we believe the increased functionality and streamlined site will offset any frustration you may have.

We have thoroughly tested the site, and judge it to be fully functional. In the event you find something which we missed, please contact us at NST Center Webmaster and we will respond accordingly.

The NST Center staff thanks you for your continued support.

MEC Introduces Lightweight HVOF Gun

Metallizing Equipment Co. (MEC) introduces one of the world's lightest HVOF guns 4.07 lb (1.85 kg) with high spray capacities for high-performance powders (WC-12 Co, Cr_3C_2-25 NiCr, etc.). It will give competitive coating characteristics over the equivalent category products like DJ®, Jetkote®, Top Gun®, HV-2000®, etc. Along with other applications, the HVOF coating is used as hard chrome replacement.

The HIPOJET™-2700 spray gun can be fitted with a hybrid device for increased particle velocity and dense coatings. Both auto-ignition and manual operational versions are available.

A 13.2 lb (6 kg) payload robot is enough for this system resulting in great saving of capital and operation cost. A simple pressure feed type powder feeder (model: PF-3350-HP) is supplied with the system.

The system has been designed ergonomically and is very user friendly. The complete system is compact and mounted on a cart requiring approximate space of 2.3 x 2.0 x 6.2 ft (700 x 600 x 1900 mm) (L x W x H).

With a world wide distributing network, MEC offers the HIPOJET-2700 HVOF system, that confirms to EN safety standards (CE marked) at competitive price much less than the popular systems available in the market. MEC has made it possible by maintaining compact inventory and lean manufacturing techniques.

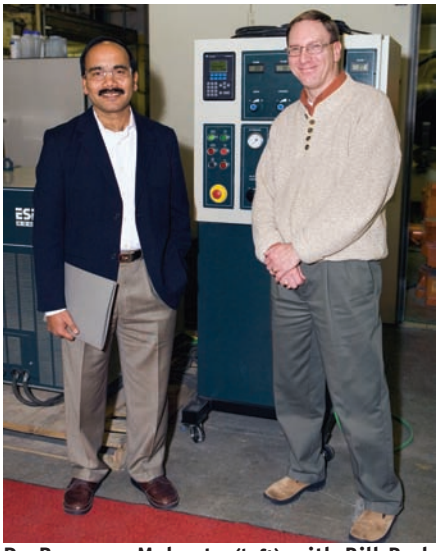
MEC offers full range of thermal spray systems and parts including combustion flame, twin wire arc, HVOF (liquid fuel).

MEC invites you to view their product range at stall # 74, ITSC - 2007, to be held in China (May14-16).

For more information on MEC products, contact Mr. S.S. Gehlot, DGM - Marketing, tel: +91.291.2747601, fax: 2746359, email: mecpl@sancharnet.in, website: www.mecpl.com **See advertisment page 8.**

Progressive Technologies and The University of Michigan

Progressive Technologies has delivered a 100HE high enthalpy plasma spray system to the University of Michigan in Dearborn, for use in their advanced thermal spray coating development applications. According to Dr. Pravansu Mohanty, Associate Professor, Department of Mechanical Engineering, they will utilize the 100HE plasma system in their thermal spray lab on work involving net-shape forming, laser beam densified ceramics and vacuum plasma coatings.



Dr. Pravansu Mohanty (left) with Bill Barker

The 100HE provides the University of Michigan the opportunity to spray high performance ceramic materials due to the high enthalpy nature of the systems' plasma plume. In addition, since the 100HE can feed powder via axial, radial and external feed modes the system provides Dr. Mohanty's lab with increased flexibility in spraying novel material combinations.

For more information about thermal spray capabilities and research at University of Michigan-Dearborn, contact Dr. Pravansu Mohanty, Dept. of Mechanical Engineering, The University of Michigan-Dearborn, 4901 Evergreen Road, Dearborn, MI 48128-1491, tel: 313.593.4254 fax: 313.593. 3851, email: pmohanty@umich.edu

For more information on the 100HE plasma spray system, contact Bill Barker, Sales Engineer, Progressive Technologies, Inc., 4695 Danvers Drive SE, Grand Rapids, MI 49512, tel: 616.957.0871, fax: 616.957.3484, email: wnb@ptihome.com

NEW FEATURE **SPRAYTIME® *Ask the Experts***

SPRAYTIME now has a panel of "experts" to answer your thermal spray questions.

Don Bowe, Air Products**, *Industrial Gas***
Daryl Crawmer, Thermal Spray Technology, Inc. - **Safety - Plasma Spraying - Applications**
Mitch Dorfman, Sulzer Metco (US) Inc. **Powders**
Frank Hermanek, Retired - **Turbine Applications and Materials**
Paul Kammer, Kammer Associates **Combustion Spraying and Atomized Powders**
Sanjay Sampath, State University of New York - **Coatings' Properties and Characterization**
Mark Smith, Sandia National Labs **Cold Spray**
Richard Thorpe, Praxair TAFA - **Equipment and HVOF Spraying**
Bob Unger, Polymet Corporation **Electric Arc Spraying**

These individuals are ready to answer your questions in an educational manner to share with the entire SPRAYTIME readership. Questions are not limited to the subject areas listed above. If your question is outside the expertise of these panel members, we will find the right person to answer your question. ***Guidelines are as follows:***

- Questions should be 25 words or less and submitted only by e-mail to SPRAYTIME@thermalspray.org
- Upon reveiw and acceptance, questions will be distributed to appropriate panel member(s)
- Due to the publication time schedule, should not be a question for which the individual needs an immediate answer.
- The question must be accompanied by the name and affiliation of the submitter; however, the name will not be published.
- SPRAYTIME reserves the right to edit any question (and the answers) and due to space and time limitations only questions selected for publication will be answered.

To submit a question or obtain more information, contact Kathy Dusa at SPRAYTIME via email spraytime@thermalspray.org

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For a free copy of the "What Is Thermal Spray?" publication, send an email request to itsa@thermalspray.org

Technical Program Open to Public

The ***International Thermal Spray Association*** welcomes non-member participation at the Technical Program portion of their membership meetings. ITSA membership meetings are typically three-day events with a thermal spray technical program on Friday from 8:00 am through 5:00 pm.

This is in response to interest from non-member individuals wanting to take advantage of these valuable thermal spray educational opportunities.

The February 15, 2008 Technical Program will be held in Waikoloa, Hawaii. The cost for non-members to attend is $400, which includes breakfast and lunch.

For more information, contact Kathy Dusa email kathydusa@thermalspray.org

Cold Spray 2007 Conference

The ASM Thermal Spray Society will host a two-day ***Workshop on Cold Spray Technology*** (Cold Spray 2007), October 8-9 at the Crown Plaza Quaker Square, Akron, Ohio.

Attendees will gain basic understanding of the cold spray process, follow global R&D programs on cold spray technology, receive first-hand information on industrial applications, and be able to network with international experts. The meeting also features an industrial visit to ASB Industries, Inc., for live demonstrations of cold spray and ancillary systems, including CGT's Kinetic 3000 and Kinetiks 4000 systems and Centerline's SST system.

The meeting will feature a keynote address by Mr. Victor Champagne of the Army Research Lab, Aberdeen, MD, and invited presentations by experts from around the world Presentations will cover topics ranging from basic science and modeling, spray systems and accessories, preparation and characterization of coatings, industrial applications, etc. Speakers will include Prof. Tim Eden (Penn State Univ, State College), Dr. Dennis Helfrittch (Army Research Lab., Aberdeen), Dr. Bruce Hinton, (DSTO, Australia), Mr. Helmut Hoell (CGT Technologies, Germany), Dr. Jegan Karthikeyan (ASB Industries, Barberton), Prof. Thomas Klassen (Helmut Schmidt Univ., Germany), Werner Kroemmer (Linde, Germany), Prof. Chaghee Lee (Hanyang Univ., Korea), Dr. Jean-Gabriel Legoux (National Research Center, Montreal, Canada), Prof. Roman Maev (Univ. of Windsor, Canada), Prof. Kazuhiko Sakaki (Shinshu Univ., Japan), Mr. Tobias Schmidt (Helmut Schmidt Univ., Germany), Dr. Thomas Van Steenkiste (Delphi Research Lab., Shelby Township), Dr. Thorsten

Stoltenhoff (Praxair Surface Tech., Germany), Prof. Tianying Xiong (Chinese Academy of Sciences, China) and Stefan Zimmerman (HC Starck, Germany).

Table-top exhibits will show case the products and services of various suppliers such as spray equipment, ancillary systems, gas supply, powders, preparation and characterization of coatings and application development.

For more information, contact: ASM Customer Service, 800-336-5152 or (440) 338-5151 or Visit the web at www.asminternational.org/events for more details.

G-TEC Introduces Second-Generation Natural Gas HVOF System

HVOF thermal sprayers will improve coating quality, work faster and cust fuel costs by up to 75% with the new second generation of High Capacity Series Torch Boosters from G-TEC Natural Gas Systems.

TB-500H HVOF Torch Booster System

The new design features a compressor cooler module added to the TB-250H and TB-500H torch boosters to enhance system performance and extend system lifespan. Customers can choose between air or chilled water compressor cooler modules.

"Customers will see benefits in longer duty cycles, no heat-related shutdowns and ultimately their systems will last longer", notes Ed Howard, G-TEC Sales Manager. "The pressures required for HVOF thermal spray generate very high operating temperatures. Compressors are sensitive to heat and the new compressor cooler module will let them run cooler all day, even 24/7. One G-TEC customer reports operating his TB-500H system for 45 non-stop hours."

G-TEC's H-Series torch boosters raise standard utility gas pressure, normally less than 1 psi to 150 psi (10 bar) with volume of 500 scfh (235 lpm), sufficient to operate HVOF spray equipment from a variety of manufacturers. If 15 psi (1 bar) utility gas supply is available then one TB-500H torch booster can supply 1,000 scfh (470 lpm), enough to operate two HVOF guns simultaneously, or the TB-250H torch booster will operate one HVOF gun.

Natural gas is an excellent fuel gas for many thermal spray applictions if it is available at sufficient pressure, but most gas utilities cannot delivery 150 psi (10 bar) so customers are forced to use propane or propylene.

Torch Boosters replace propane and propylene cylinders by providing a constant supply of high-pressure natural gas straight from the utility pipeline. Natural gas prevents re-liquification problems, cuts fuel gas costs and provides a coating quality that is at least equal to, and often better, then propane or propylene. G-TEC torch boosters provide high-pressure gas as soon as they are turned on - there are no storage tanks to fill.

G-TEC torch boosters are one-half to two-thirds less expensive than other natural gas compressor systems for HVOF and are much easier to install. No special site preparation, such as a concrete pad, is required; the systems can be installed indoors in a normal working environment without additional ventilation, safety cages or other expensive equipment. It is not necessary to heat pipes delivering gas to the HVOF gun.

TB-250H and TB-500H Torch Boosters are certified by CSA International and are compliant with appropriate CE Directives in Europe.

For more information, contact Ed Howard at 1.800.451.8294 or via email ehoward@gas-tec.com, webiste www.gas-tec.com

Thermal Spray Pavilion Planned for 2007 Fabtech International and AWS Welding Show in Chicago

Mark your calendar now . . .

In collaboration with the American Welding Society (AWS), the Society of Manufacturing Engineers (SME), and the Fabricators and Manufacturers Association (FMA), The International Thermal Spray Association is proud to announce a **Thermal Spray Pavilion** at the ***Fabtech International & AWS Welding Show*** **November 11-14, 2007** at the McCormick Place in Chicago with an estimated attendance of 17,000.

ITSA is planning many exciting and innovative industrial presentations for all show attendees. We encourage you to start planning now to be part of this special exposition highlighting the thermal spray industry to the AWS, SME, and FMA attendees.

To reserve booth space in the Thermal Spray Pavilion for 2007, 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 and www.fmafabtech.com and www.sme.org/fabtech

CALENDAR OF EVENTS

APRIL 2007

16-20 Detroit, MI USA *SAE World Congress* - Contact tel: 877.606.7323 or 724.776.4970, fax: 724.776.0790, email: customerservice@sae.org, web: www.sae.org

26 - 28 Chandler, AZ USA *International Thermal Spray Association Membership Meeting and Technical Program* - contact Kathy Dusa tel: 440.357.5400, email: kathydusa@thermalspray.org

MAY 2007

7-10 Indianapolis, IN USA *AISTech 2007*, Iron & Steel Technology - Association for Iron & Steel Technology tel: 724.776.6040, fax: 724.776.1880, web: www.aistech.org

13-16 Denver, CO USA *PowderMet 2007* - contact Metal Powder Industries Federation tel: 609.452.7700, email: info@mpif.org, web: www.mpif.org

14-17 Beijing, China *Intl Thermal Spray Conference & Expo ITSC 2007* - contact ASM Int'l, tel: 800.336.5152 (ext. 6) or 440/338-5151, web: www.asminternational.org, email: customerservice@asminternational.org

14-17 Montreal, Canada *ASME Turbo Expo 2007* presented by the Int'l Gas Turbine Institute - visit www.turboexpo.org

28-31 Moscow, Russia *Schweissen & Schneiden Russia* - cosponsored by the DVS German Society for Welding and Allied Processes and the Russian Assoc of Non-Destructive Testing and Welding (NAKS) - contact Messe Essen GmbH tel: +49(0)201.7244.227, email: regiani@messe-essen.de, web: www.messe-essen.de

JUNE 2007

4-7 San Diego, CA USA *MegaRust 2007 Marine Coatings & Corrosion Conference* - contact Karen Chitwood, kchitwood@nstcenter.com, web: www.nstcenter.com

4 San Diego, CA USA *Introduction to Thermal Spray Coating Processes at MegaRust 2007*, 1-4 pm - visit www.nstcenter.com to register

5-7 Baltimore, MD USA *SAMPE 2007* - contact Doris Weaver, tel: 626.331.0616, email: doris@sampe.org, web: www.sampe.org

12-16 Düsseldorf, Germany *9th Intl Trade Fair & Symposium for Thrmo Process Technology THERMPROCESS and 7th Intl Metallurgical Technology Trade Fair METEC* - tel: 312.781.5180, email: info@mdna.com, web: www.mdna.com or www.thermprocess.de

19-21 Aachen Germany *8th Intl Conference on Brazing, High Temperature Brazing and Diffusion Bonding LÖT2007* - contact DVS German Welding Society, tel: +49(0)211.1591.302, email: tagungen@dvs-hg.de, www.dvs-ev.de/loet2007

19-22 Shanghai China *Beijing Essen Welding* - contact Messe Essen GmbH tel: +49(0)201.7244.227, email: regiani@messe-essen.de, web: www.messe-essen.de

25-28 Baltimore, MD USA *18th Advanced Aerospace Materials & Processes Conf & Expo (AeroMat2007)* - contact ASM Int'l, tel: 440/338-5151, web: www.asminternational.org, email: customerservice@asminternational.org

AUGUST 2007

6-9 Fort Lauderdale, FL USA *40th Intl Metallographic Society IMS Convention* - contact ASM International, tel: 800.336.5152 or 440.338.5151 x5900, fax: 440.338.4634; em: cust-srv@asminternational.org, web: www.asminternational.org

6-9 Fort Lauderdale, FL USA *Microscopy & Microanalysis 2007* - contact Phillip Ridley email pridley@bostrom.com, web: http://microscopy.org/MMMeetings/MM07

SEPTEMBER 2007

9-13 Sunriver, OR USA *2007 Corrosion Solutions Conference* - contact Sheryl Renzoni, ATI Wah Chang, email sheryl.renzoni@wahchang.com, web www.corrosionsolutions.com

10-17 Nürnberg, Germany *Euromat 2007* European congress & Exhibition on Advanced Materials & Processes - contact tel: +49.69.75306.747, email: euromat@fems.org, web: www.euromat2007.fems.org, www.mse-expo.com

16-20 Detroit, MI USA *Materials Science & Tech. Conf & Expo (MS&T'07)* - organized by ASM, ACerS, AIST, AWS, and TMS, and held in conjunction with *ASM Heat Treating Society Conf & Expo*, contact ASM Int'l, tel: 440.338.5151 x5900, em: cust-srv@asminternational.org, www.asminternational.org

17-20 Detroit, MI USA *24th ASM Heat Treating Society Conf & Expo* - held in conjunction with MS&T'07 - contact ASM Int'l, tel: 800.336.5152 or 440/338-5151 ext. 6, fax: 440.338.4634, web: www.asminternational.org, email: customerservice@asminternational.org

OCTOBER 2007

CALENDAR OF EVENTS

CALENDAR OF EVENTS

2-4 Charlotte, NC USA *South-Tec Machine Tool and Metalworking Expo* - contact SME Society of Manufacturing Engineers tel: 800.733.3976, web: www.sme.org/southtec

8-9 Akron, OH USA *Cold Spray 2007 Conference* with table top exhibits and an industrial visit to ASB Industries - contact ASM Int'l, tel: 800.336.5152 or 440/338-5151 ext. 6, web: www.asminternational.org/events, email: customerservice@asminternational.org

31 OCT - 2 NOV Kiev, Ukraine *Kiev Technical Trade Show 7th Welding Ukraine 2007, Surface Engineering 2007, Sheet Metal Working 2007, Wire Steel Ropes 2007, Cabling Wiring 2007* - contact Olga Krasko, tel.: 00.380.44.526.91 .84, email olga@welding.kiev.ua, web www.weldexpo.com.ua .

NOVEMBER 2007

4-8 San Jose, CA USA *33rd Int'l Symposium for Testing & Failure Analysis (ISTFA2007)* contact ASM Int'l, tel: 440/338-5151 ext. 6, web: www.asminternational.org, em: customerservice@asminternational.org

11-14 Chicago, IL USA *FABTECH Int'l & AWS Welding Show* - ***with a Thermal Spray Pavilion*** - organized by American Welding Society, web: www.aws.org,Fabricators & Mfgrs Assoc, web: www.fmafabtech.com, Society of Manufacturing Engineers, web: sme.org/fabtech

DECEMBER 2007

11-13 New Orleans, LA USA ASME Gas Turbine Users Symposium 2007 co-located with Power-Gen International - Contact Lisa Gasaway, tel: +1-918-832-9245, email: pgievent@pennwell.com

14 - 16 Hawaii, HI USA *International Thermal Spray Association Membership Meeting and Technical Program* - contact Kathy Dusa tel: 440.357.5400, email: kathydusa@thermalspray.org

FEBRUARY 2008
JUNE 2008

8-12 Washington, DC USA *World Congress on Powder Metallurgy & Particulate Materials* - email: info@mpif.org, web www.mpif.org

9-13 Berlin, Germany *ASME Turbo Expo 2008* - visit

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

Jory Wright New Quality Manager and Customer Service Representative

Accuwright Industries, Inc. introduces ***Jory Wright*** as the Quality Manager and Customer Service Representative. Jory started at a young age working at Accuwright when his father, David Wright, started the company in 1996. He would help his dad in masking and grit blast operations after school and on weekends.

Although working full time as the QA Manager in 2004, he took a leave of absence to serve a full time mission for his church. After serving for two years in the small South American country of Suriname, he has returned to accept his role again with much greater enthusiasm and responsibility. (In Suriname he learned the language of Dutch and speaks it fluently.)

He currently fills one of three key manager positions at Accuwright. He is now complementing his role by working toward a bachelors degree in business, by continuing his education at a local community college while working full time. We expect to see great things from Jory throughout the years.

For more information, contact David Wright, Accuwright Industries, tel: 480.892.9595, fax: 480.892.9799, email: dave@accuwright.com, web: www.accuwright.com

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

FREE Thermal Spray Patent Copy

A copy of the original Schoop thermal spray patent - suitable for framing - is available from the International Thermal Spray Association. This is a photograph copy of the original February 19, 1914 "*Apparatus for Spraying Molten Metal and Other Fusible Substances*" by M.U. Schoop from the United States Patent Office. Send an email request to itsa@thermalspray.org

International Thermal Spray Association Welcomes New Members

Centerline Windsor Limited has joined the International Thermal Spray Association.

With nearly 50 years experience, CenterLine Windsor LTD. has become a recognized industry leader in custom welding and metal fabricating equipment, servicing the needs of the automotive, mass transit and other industries.

In 2003, CenterLine established the Supersonic Spray Technologies Division (SST) to offer a solution to cold spray requirements that exist within many industires. As a premier designer and manufacturer of gas dynamic spray systems that incorporate patented and unique design features, SST is able to offer standard and custom designs to suit specific applications.

For more information, contact Julio Villafuerte, tel: 519.734.8464, email: julio.villafuerte@cntrline.com, website: www.supersonicspray.com

Climax Engineered Materials has joined the International Thermal Spray Association.

Climax Engineered Materials, a Phelps Dodge Company, provides molybdenum powders and mulybdenum powder blends for thermal spray applications. Their "PM" series of powders and "PB" blends are designed to meet customer-specified flow, physical and thermal characteristics. Powders are manufactured to meet thermal spray coating needs based on automotive, chemical and aerospace requirements. PM powders and PB blends are produced at their facilities from the mine to the finished powder. Climax also offers various forms of copper, rhenium and cobalt materials and components.

For more information, contact Matthew DeLuca, tel: 520.805.8700, email: mdeluca@phelpsdodge.com, website: www.climaxengineeredmaterials.com

Linde and BOC Group become The Linde Group

Wiesbaden/Windlesham, 6 September 2006

Linde AG today announced its plans for the future, following the merger of Linde AG and The BOC Group plc. The merger, which took place on the 5th September 2006, will create a world-leading industrial gases and engineering company.

The new company will trade under the name "The Linde Group". A new brand has been designed based on the long tradition and corporate heritage of both companies, but which also represents the newly international character of the company. "This is an historic day for Linde and BOC", said Professor Reitzle. "Both companies have a proud history streching back 100 years, and our paths have crossed many times before. Today we are finally coming together to form a world market leader, a true global player. We will approach the upcoming integration process in partnership with BOC, in order to create all the conditions necessary to extract the maximum potential from what is a perfect combination of companies."

For more information, contact Dr. Joe Berkmanns, email: joachim.berkmanns@us.linde-gas.comvisit www.us.linde-gas.com

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.

Chairman Simonds

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

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 questionairre.

ITSA Headquarters

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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.

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New Brazing Course from Wall Colmonoy

Wall Colmonoy announces semi-annual Modern Furnace Brazing Course designed to solve metal-joining problems, and reduce manufacturing costs.

Madison Heights, Michigan-Design, metallurgical and production engineers are invited to take advantage of Wall Colmonoy's expertise and practical experience in the field of brazing in an intensive three-day training course entitled "Modern Furnace Brazing." The course takes place May 9, 10, and 11 in Madison Heights, Michigan.

The course, led by recognized experts in the field, covers such topics as joint selection, interaction of base and filler metals, protective atmospheres, joint preparation, fixturing, and quality control.

For more information, students may call Marianne Huesing at 248.585.6400 ext. 273.

To download the school brochure, or learn more about the company, visit www.wallcolmonoy.com.

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INDUSTRY NEWS

Journal of Thermal Spray Technology®

A publication of the **ASM Thermal Spray Society**
(An abstract from December 2006 VOL. 15: NO. 4)

A New Approach to Online Thickness Measurement of Thermal Spray Coatings

A.Nadeau, L.Pouliot, F.Nadeau, J.Blain, S.A.Berude, C.Moreau, and M. Lamontagne

In the past 10 years, significant progress has been made in the field of advanced sensors for particle and spray plume characterization. However, there are very few commercially available technologies for the online characterizatio of the as-deposited coatings. In particular, coating thickness is one of the most important parameters to monitor and control. Current methods such as destructive tests or direct mechanical measurements can cause significant production downtime. This article presents a novel approach that enables online, real-time, and noncontact measurement of individual spray pass thickness during deposition. Micron-level resolution was achieved on various coatings and substrate materials. The precision has been shown to be independent of surface roughness or thermal expansion. Results obtained on typical high-velocity oxyfuel and plasma-sprayed coatings are presented. Finally, current fields of application, technical limitations, and future developments are discussed.

Read the entire article in the December 2006 *Journal of Thermal Spray Technology*. For more information visit www.asminternational.org/tss or contact ASM Customer Service Center, ext. 5900 tel: 800.336.5152 or 440.338.5151; email: customerservice@asminternational.org

Editor: Christian Moreau
Associate Editors: Jan Ilavsky, Seiji Kuroda, Lech Pawlowski, and Armelle Vardelle

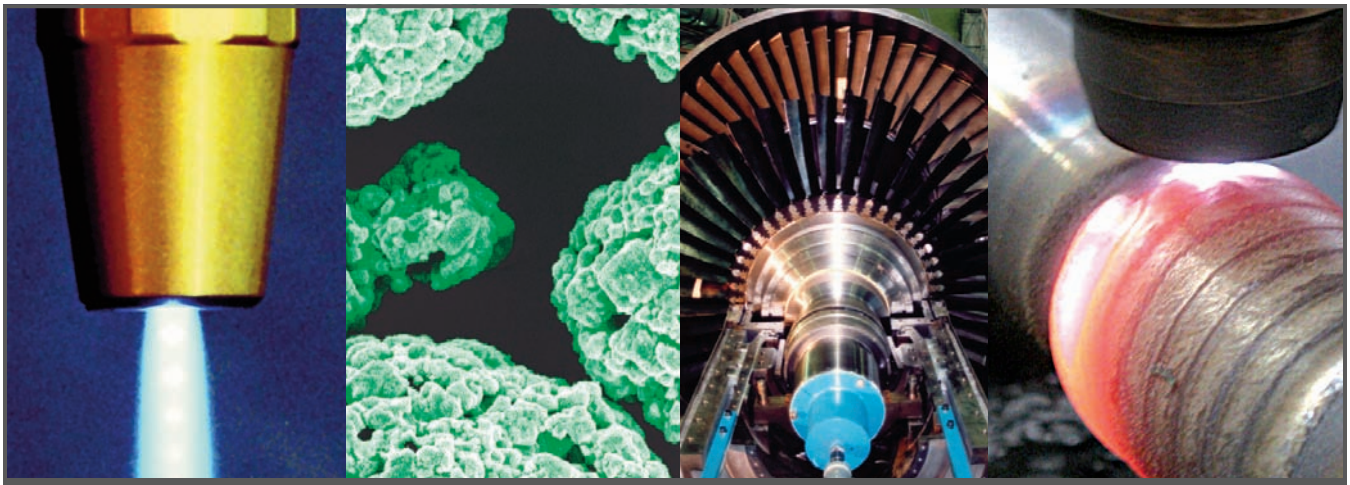
Military/NASA Group Announces Consolidated Source for Processes, Product Data

The Joint Service Solvent Substitution Working Group (JS3WG) announces the availability of an internet-accessible resource of value to manufacturers involved in the fabrication, repair, and cleaning of components, sub-assemblies, and products for the military. The site is also of interest to suppliers of cleaning agents.

The JS3WG database is a resource to maintain and distribute solvent substitution efforts by the Department of Defense (DoD) and the National Aeronautics and Space Administration (NASA), to eliminate products that contain hazardous air pollutants (HAPs) from cleaning operations, and to prevent duplication of efforts. Evaluations of cleaning agents that are not volatile organic chemicals (VOCs) or have very low levels of VOCs are also included. Industry is invited to visit the database, to submit comments and questions, and to contribute independent test results, particularly tests based on recognized standards.

To tour the database, go to: http://js3.ctc.com/

For more information, visit Surface Quality Resource Center (SQRC) www.sqrc.org



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ASM TSS Email Discussion Group

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