FABTECH 2017 Preview

Dimensional Restoration of High-Value, Precision-Gauging Fixtures by Cold Spray
HIJET®-9610 is a New Generation High Velocity Combustion Wire Spray System, which provides supersonic spray velocities, combined with improved heating and melting of the wire particles. The HVOF Wire technique has great opportunities where a porous free, very dense, high performance wear resistance coating at most economical cost is the requirement. Unique design of the gun fulfills this gap and opens the scope for the users to use the metallic wires in HVOF rather than using the expensive powders and thus makes it a promising solution to achieve best coating properties for many industrial applications. HVOF Wire is more cost effective than HVOF (Powder).

<table>
<thead>
<tr>
<th>Coating Characteristics</th>
<th>Mo</th>
<th>High Carbon Steel</th>
<th>SS 420</th>
<th>Cu</th>
<th>Al</th>
<th>Al-Bronze</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness (ASTM-E384)</td>
<td>950 HV</td>
<td>550 HV</td>
<td>519 HV</td>
<td>145 HV</td>
<td>48 HV</td>
<td>236 HV</td>
</tr>
<tr>
<td>Adhesion strength (ASTM-C633)</td>
<td>55 MPa</td>
<td>60 MPa</td>
<td>45 MPa</td>
<td>20 MPa</td>
<td>18 MPa</td>
<td>19 MPa</td>
</tr>
<tr>
<td>Porosity (ASTM-2109)</td>
<td>&lt;0.70 %</td>
<td>&lt;1 %</td>
<td>2.3 %</td>
<td>3.5 %</td>
<td>4.5 %</td>
<td>3.5 %</td>
</tr>
<tr>
<td>Thickness</td>
<td>237 μm</td>
<td>260 μm</td>
<td>250 μm</td>
<td>425 μm</td>
<td>283 μm</td>
<td>400 μm</td>
</tr>
<tr>
<td>As Sprayed Ra (ASTM-D7127)</td>
<td>2.83 μm</td>
<td>11 μm</td>
<td>8 μm</td>
<td>10 μm</td>
<td>6 μm</td>
<td>10 μm</td>
</tr>
<tr>
<td>Deposition Efficiency (DIN EN 17836)</td>
<td>60%</td>
<td>70%</td>
<td>70%</td>
<td>80%</td>
<td>56%</td>
<td>71%</td>
</tr>
<tr>
<td>Wire feed rates</td>
<td>125 cm/min</td>
<td>95 cm/min</td>
<td>95 cm/min</td>
<td>190 cm/min</td>
<td>390 cm/min</td>
<td>170 cm/min</td>
</tr>
<tr>
<td>Coverage</td>
<td>1.95 kg/m²/100μm</td>
<td>0.700 kg/m²/100μm</td>
<td>0.681 kg/m²/100μm</td>
<td>1.41 kg/m²/100μm</td>
<td>0.472 kg/m²/100μm</td>
<td>1.07 kg/m²/100μm</td>
</tr>
</tbody>
</table>

* Tested in MEC Testing Laboratory (ISO 17025:2005 Certified Lab.)

METALLIZING EQUIPMENT CO. PVT. LTD.
sales@mecpl.com, marketing@mecpl.com, trade@mecpl.com
Web: www.mecpl.com
Published by International Thermal Spray Association, A Standing Committee of the American Welding Society

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

OFFICERS
Chairman: Jim Ryan, TechMet Alloys LLC
Vice-Chairman: David Lee, Kennametal Stellite Company

EXECUTIVE COMMITTEE (above officers plus the following)
Dan Hayden, Hayden Corporation
Bill Mosier, Polymet Corporation
Peter Ruggiero, Curtiss-Wright Surface Technologies
David Wright, Accuwright Industries Inc.

SPRAYTIME®
Publisher Mary Ruth Johnsen
Editor Cindy Weihl

SPRAYTIME® Editorial Staff
Kristin Campbell  Katie Pacheco  Roline Pascal
Designer Willie Chinn
Advertising Lea Owen

SPRAYTIME® (ISSN 1532-9585) is a quarterly publication of the International Thermal Spray Association. Printed on Recycled Paper. Copyright© 2017 by the International Thermal Spray Association. Starred (*) items excluded from copyright. The International Thermal Spray Association is not responsible for the accuracy of information in the editorial, articles, and advertising sections of this publication. Readers should independently evaluate the accuracy of any statement in the editorial, articles, and advertising sections of this publication that are important to him/her and rely on his/her independent evaluation.

American Welding Society
Att: SPRAYTIME
8669 NW 36 Street, #130, Miami, Florida 33166-6672
Phone: 800-443-9353 or 305-443-9353 | spraytime.org

A subscription to SPRAYTIME® is free for individuals interested in the thermal spray and coatings industry. Visit spraytime.org to subscribe.
Oerlikon is building a surface solutions center in Nagoya, Japan, to provide up-to-date technologies and services to the Japanese automotive industry. The investment, a sum in the low double-digit millions of Swiss francs, will allow the company to meet the requirements of a recent contract with one of the largest Japanese automotive manufacturers. The company also plans to double its workforce in Nagoya over the long term.

The new site will offer Oerlikon Balzers coating technologies and Oerlikon Metco friction system coating technologies. Its thin-film and thermal spray coatings, along with friction system technologies, are used in many applications in the automotive industry. Engineered surfaces of components and engine parts in cars lead to improvements in engine performance, while the surface-treated tools and molds used in automotive manufacturing are durable.

"The new coatings center in Nagoya is an important step for us in strengthening our foothold in the Japanese automotive market. We will be able to offer our customers a comprehensive set of automotive surface technologies. Our coating solutions help to optimize the performance of interacting surfaces in relative motion, thereby extending the lifespan of manufacturing tools, motor parts, and components, which in turn increases the efficiency and performance of these products for customers," said Roland Fischer, CEO of the Oerlikon Group.

The center is scheduled to open in early 2018.

AWS Updates C2.16 Guide for the Thermal Spray Industry

AWS C2.16/C2.16M:2017, Guide for Thermal Spray Operator Qualification Programs, an American National Standard, is now available. The technical publication provides a guide for companies, agencies, and institutions to create a program for qualifying thermal spray operators; such qualification programs are frequently specific to the employer or testing site.

Information related to training, knowledge and skill testing, and coating system inspection methods is also detailed. Sample thermal spray operator qualification test parameters and forms are featured to address common engineering and corrosion-control applications using arc, flame, atmospheric plasma, and high velocity oxygen fuel spray processes.

This edition has been revised and reformatted to clarify the intent and readability. Therefore, the vertical line in the margins or underlined text in clauses, tables, or figures common to AWS standard revisions has not been applied to indicate editorial or all technical changes from the previous edition.

The document can be purchased at pubs.aws.org. For the printed hard copy or downloadable PDF, the member price is $51 and the nonmember price is $68.
Polymet Celebrates 50th Anniversary

Polymet, West Chester, Ohio, a manufacturer of wire for thermal spray, hardfacing, and welding applications, has now been operating for 50 years. The company was founded in 1967 to manufacture one-of-a-kind hardfacing consumables for the aerospace industry. Today, it has grown into a globally recognized provider of hardfacing solutions for several industries including aerospace, oil and gas, power generation, mining, lumber, and more. “We constantly strive to evolve. Over the past few years, we have significantly invested in R&D, and we are already seeing the benefits,” said President Bill Mosier. “I am confident the next 50 years will be even more successful than the last.”

In addition, the company has moved to a 90,000-sq-ft building. “Our new facility will not only make our operations more efficient but will also facilitate future growth,” Mosier said. “Polymet has been in operation in the West Chester area for 50 years, and we could not be more excited to celebrate with a new, bigger facility.”

For half a century, Polymet has been in business manufacturing many types of wires. Photographed is an employee packaging material.

Bodycote’s Washington Facility Achieves Aerospace Accreditation

Bodycote’s Camas, Wash., hot isostatic pressing (HIP) location has earned the highest level of Nadcap accreditation following its most recent audit. As one of the original HIP facilities to achieve this standard, the site plans to maintain its extended merit status. Historically, the site has played a role in the aerospace supply chain and supporting new aerospace programs.

Kermetico and Medicoat AG Join Forces on Coating Project

In July 2017, Kermetico Inc., Benicia, Calif., a supplier of high velocity air fuel (HVAF) and high velocity oxygen fuel (HVOF) spraying equipment, and Medicoat AG, a Swiss-based company working in the thermal spray industry, started a cooperative project. They will provide a coating equipment system and solutions for European and North American markets. Both partners plan to deliver a multifunctional plasma + HVOF + HVAF system by the end of this year.
UES Ships Its Newest Product to Tinker Air Force Base

UES Inc., Dayton, Ohio, a science and technology firm, recently announced the first shipment of Robo-Met.QC™ to Tinker Air Force Base in Oklahoma. The equipment enables automated, high-speed metallography of thermal spray coatings for real-time analysis and decision making.

“By enabling consistent, rapid, and repeatable evaluation of coatings applied to various components, our system allows for more samples to be analyzed within a shorter time,” said Rhoe Ramos, program manager. “If I can get repeatable and accurate metallography completed on my coatings in about 90 minutes, that’s a valuable time saving to any spray shop.”

“We are grateful to our sustainment center customers and AFRL stakeholders for guidance, encouragement, and passionate criticism along the way,” added Veeraraghavan Sundar, manager of emerging products. “They helped us build a better product with detailed input.”

Implementation of the equipment within sustainment depots as well as maintenance, repair, and overhaul (MRO) operations is expected to increase the efficiency of aerospace MRO processes. Two more systems will be shipped to Hill and Warner Robins Air Force Bases later this year.

U.S. Patent Awarded for Sprayed-On Coatings

TST Coatings, Sun Prairie, Wis., a provider of surface-engineered solutions, has recently announced the issue by the U.S. Patent and Trademark Office of a new patent for decorative and functional sprayed-on coatings.

US 9,611,531, an invention by Fisher Barton’s Daryl Crawford, is titled “Textured spray coatings for decorative and functional surfaces and method of applying same.” It is suited for parts and surfaces exposed to bacterial contamination.

The sprayed-on coating can be used in many applications including handles, faucets, bath, and kitchen fixtures as well as components used in medical facilities. Coatings with copper or copper-based alloys are suited for food-processing and handling implements, appliances, and devices.

MOVING?
Make sure delivery of your SPRAYTIME is not interrupted.
Contact itsa@thermalspray.org with your new address information.
Product Spotlight

Thermal Spray System Platform Offers Advanced Features in a Compact Package

The UniCoatPro™ thermal spray system platform provides users with better quality control and coating consistency. The controller incorporates a touchscreen, graphical interface that is intuitive to use and easy to learn. Spray parameter recipes are created, stored, and recalled with a few touches on the graphical interface. Its safety features include a multilevel alarm package that notifies the operator of out-of-bound conditions and shuts down the system safely in critical situations. A closed-loop process control ensures coating reliability. Remote assistance can be securely initiated by the user via the Internet or 3G communications to the company, where a technician can analyze the customer’s system in real time. The platform is available for either the atmospheric plasma spray process or the liquid-fuel HVOF spray process. For the many thermal spray facilities that use both of these processes, their learning curve will be reduced and process standardization will be enhanced. The systems can operate with up to four powder hoppers (feed lines), giving users the ability to immediately spray a top coat after a bond coat, as well as maintain their most used materials in the additional powder hoppers. The system platform is also fully equipped for use with an external controller, such as a robotic interface that can completely control its actions.

Oerlikon Metco
oerlikon.com / +41 58 274 20 00

What:
Thermal spray coating equipment and consumables from Praxair

Why:

- Services: installations and training, calibrations and repairs
- Half a century of leadership

www.praxairsurfacetechnologies.com
Additive Manufacturing Processes Reduce Production Time and Cost of 3D-Printed Parts

Powdermet® technologies, a group of additive manufacturing processes used in the production of complex components utilizing powder metallurgy, combine 3D printing with well-established net shape and near-net shape techniques. This technology reduces the manufacturing time and production cost of a part compared to producing the same part using only 3D printing. These processes ensure complete powder consolidation, achieve structural homogeneity, and eliminate internal porosity and unconsolidated powder flaws. The processes can produce components with varying surface features and thicknesses with high structural integrity. The need for brazing or welding parts to form larger structures is eliminated. Instead, the finished part can be produced as one seamless component, thus avoiding the size limitations imposed by the constraints of 3D printing. Different parts of a component can be formed from different alloys for a cost-efficient solution. Component design can also be tailored to performance requirements.

Bodycote
bodycote.com / +44 (0)1625 505300

Flame-Spraying Gun Useful for Internal Diameters

The flame spray ID gun is designed to spray high-performance coatings inside pipes or sleeves larger than 150 mm in diameter. It provides spray rates and deposit efficiencies comparable to external surface spraying techniques. The gun uses thermal spray Flexicord in a range of ceramic, metallic, and carbide materials to deliver optimal wear-resistant coating for a wide range of applications. The gun also delivers low porosity and hard coatings, providing greater resistance to abrasion and erosion to extend surface life. It can produce coatings up to 800 μm. The gun’s arm length can be customized according to the user needs. It is easy to use and does not require an engineer for operation nor special tools for maintenance.

Saint-Gobain Coating Solutions
coatingsolutions.saint-gobain.com / (800) 243-0028
Report Reveals Thermal Spray Products Market, Trends, and Forecasts for 2017–2022

Thermal Spray Products Market: Global Industry Analysis and Opportunity Assessment, 2016–2026 features factors and trends impacting market growth over the forecast period (2017-2022). It also provides an in-depth analysis of the major thermal spray products industry, leading players, along with the strategies adopted by them. This enables the buyer of the report to gain a telescopic view of the competitive landscape and plan strategies accordingly. A comprehensive analysis of price, cost, gross, revenue, product picture, specifications, company profile, and contact information is also included for key industry players. In addition to estimating the thermal spray products' market potential until 2022, the report analyzes who can be the market leaders and what partnerships would help them capture the market share. It also gives an overview on the dynamics of the market by discussing various aspects such as drivers, restraints, Porter’s five forces analysis, value chain, customer acceptance, and investment scenario.

Market Reports World
marketreportsworld.com / (408) 520-9750

Nickel Powder

Hunter Chemical LLC
Producer of hydrogen-reduced nickel powder, with various particle size distributions.
Special pricing for -170+325 mesh and -325 mesh.

Hunter also produces:
- Chrome Oxide (powder/rods)
- Alumina/Titania
- Nickel/Chrome

866.461.8882
info@hunterchem.com
www.hunterchem.com

Recognize Quality...

THERMACH INC.
THERMAL SPRAY AND MACHINING

...Quality Products
...Quality Service
...Quality in Thermal Spray

See all of our products at
www.thermach.com

ph: (920) 779 - 4299
fax: (920) 779 - 4452
salesatThermach@gmail.com
ITSA Mission Statement
The International Thermal Spray Association, a Standing Committee of the American Welding Society, is a professional industrial organization dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

**JOB SHOP MEMBER COMPANIES**

**ACCUWRIGHT INDUSTRIES INC.**
Gilbert, AZ
Mr. David Wright
dave@accuwright.com / 480.892.9595
accuwright.com

**ATLAS MACHINE & SUPPLY INC.**
Louisville, KY
Mr. Richie Gimmel
richie@atlasmachine.com / 502.584.7262
atlasmachine.com

**BENDER CCP INC.**
Vernon, CA
Mr. Doug Martin
dmartin@benderus.com / 323.232.2371
benderus.com

**BYRON PRODUCTS**
Fairfield, OH
Mr. Keith King
kking@byronproducts.com / 513-870-9111
byronproducts.com

**CASTOLIN EUTECTIC**
Lausanne, Switzerland
Ms. Patricia Frund
pfrund@castolin.com / 0041.21.694.1132
castolin.com

**CINCINNATI THERMAL SPRAY INC.**
Cincinnati, OH
Mr. Bill Menth
bmenth@cts-inc.net / 513.699.3992
cts-inc.net

**CURTISS-WRIGHT SURFACE TECHNOLOGIES**
Windsor, CT
Mr. Peter Ruggiero
peter.ruggiero@cwst.com / 860.623.9901
cwst.com

**ELLISON SURFACE TECHNOLOGIES INC.**
Mason, OH
Mr. Eric Dolby
info@ellisonsurfacetech.com / 513.770.4928
ellisonsurfacetech.com

**EXLINE INC.**
Salina, KS
Mr. Brent Hillbig
b.hillbig@exline-inc.com / 785.825.4683
exline-inc.com

**F.W. GARTNER THERMAL SPRAYING**
Houston, TX
Mr. Richard McCullough
rmccullough@fwgts.com / 713.225.0010
fwgts.com

**FUSION INC.**
Houston, TX
Mr. Jeff Fenner
jfenner@fusionhouston.com / 713.691.6547
fusionhouston.com

**HAYDEN CORP.**
West Springfield, MA
Mr. Dan Hayden
daniel.hayden@haydencorp.com
413.794.4981 / haydencorp.com

**HEW INDUSTRIES INC.**
Buffalo, NY
Mr. Matt Watson
mwatson@hfwindustries.com
716.875.3380 / hfwindustries.com

**KERMETICO INC.**
Benicia, CA
Mr. Andrew Verstak
averstake@kermetico.com / 707.745.3862
kermetico.com

**NATION COATING SYSTEMS**
Franklin, OH
Mr. Larry Grimenstein
ncslgrimen@aol.com / 937.746.7632
nationcoatingsystems.com

**SPRAYMETAL INC.**
Houston, TX
Mr. Andrew Schumacher
ars@schumachercoinc.com / 713.924.4200
schumachercoinc.com

**SUPERIOR SHOT PEENING INC.**
Houston, TX
Ms. Mollie Blasingame
mmb@superiorshotpeening.com
281.449.6559 / superiorshotpeening.com

**SURFACE MODIFICATION SYSTEMS INC.**
Santa Fe Springs, CA
Mr. Rajan Bamola
rajanb@surfacementhysystems.com
562.946.7472 / surfacementhysystems.com

**TOCALO CO. LTD.**
Japan
Mr. Daisuke Inoue
inouedaisuke@tocalo.co.jp
817815207646 / tocalo.co.jp/english

**TUNGCO POWDER PROCUREMENT**
Madisonville, KY
Mr. Ryan Sizemore
rsizemore@tungco.com / 270.825.0000
tungco.com

**WHITE ENGINEERING SURFACE CORP.**
Newtown, PA
Mr. Deanne Nanni
info@whiteengineering.com / 215.968.5021
whiteengineering.com

**SUPPLIER MEMBER COMPANIES**

**AAF INTERNATIONAL**
Louisville, KY
Mr. David Kolstad
dkolstad@aafintl.com / 800.477.1214
aafintl.com

**ALLOY COATING SUPPLY**
Spring, TX
Mr. Jeffrey Noto
jnoto@alloycoatingsupply.com
281.528.0980 / alloycoatingsupply.com

**AMETEK INC.**
Eighty-Four, PA
Ms. Cindy Freeby
cindy.freeby@ametek.com / 724.225.8400
ametekmetals.com

**CAMFIL APC**
Jonesboro, AR
Mr. Matt Caulfield
matt.caulfield@camfil.com / 800.479.6801
farrapc.com

**CARPENTER POWDER PRODUCTS**
Pittsburgh, PA
Mr. Chip Arata
warata@cartech.com / 412.257.5102
carpenterpowder.com

**CENTRILINE (WINDSOR) LTD.**
Windsor, ON, Canada
Mr. Julio Villafuerte
julio.villafuerte@cntrline.com / 519.734.8464
supersonicspray.com
For example, a series of educational presentations promoting proactively participate in alternative ways at key industry events. In lieu of booth representation at tradeshows, ITSA will ITSA Member assessments going forward. This move will result in the elimination of these costly annual subsidized the cost of ITSA booth activity via annual assessments, activity at tradeshows effective July 2016. As ITSA Members Committee unanimously decided to discontinue ITSA booth tradeshows, at its April 20, 2016, meeting, the ITSA Executive received on the value of ITSA Booth participation at industry earlier this year, ITSA Members were invited to participate in an ITSA Member Satisfaction Survey, in which they were asked to rate the value of various member benefits. Based on feedback received on the value of ITSA Booth participation at industry tradeshows, at its April 20, 2016, meeting, the ITSA Executive Committee unanimously decided to discontinue ITSA Booth activity at tradeshows effective July 2016. As ITSA Members subsidized the cost of ITSA booth activity via annual assessments, this move will result in the elimination of these costly annual ITSA Member assessments going forward.

In lieu of booth representation at tradeshows, ITSA will proactively participate in alternative ways at key industry events. For example, a series of educational presentations promoting thermal spray are being scheduled as free, half-day sessions at tradeshows like FABTECH, POWER-GEN International, and CORROSION.

**ITSA SCHOLARSHIP OPPORTUNITIES**

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

**ITSA THERMAL SPRAY HISTORICAL COLLECTION**

In April 2000, the International Thermal Spray Association announced the establishment of a Thermal Spray Historical Collection that is now on display at the State University of New York at Stony Brook in the Thermal Spray Research Center, USA. Growing in size and value, there are now over 30 different spray guns and miscellaneous equipment, a variety of spray gun manuals, hundreds of photographs, and several historic thermal spray publications and reference books.

Future plans include a virtual tour of the collection on the ITSA website for the entire global community to visit. This is a worldwide industry collection and we welcome donations from the entire thermal spray community.

**ITSA SPRAYTIME**

Since 1992, the International Thermal Spray Association has been publishing SPRAYTIME® for the thermal spray industry. The mission is to be the flagship thermal spray industry publication providing company, event, people, product, research, and membership news of interest to the thermal spray community.

**JOIN THE INTERNATIONAL THERMAL SPRAY ASSOCIATION**

ITSA is a professional, industrial association dedicated to expanding the use of thermal spray technologies for the benefit of industry and society. ITSA Membership is open to companies involved in all facets of the industry—equipment and materials suppliers, job shops, in-house facilities, educational institutions, industry consultants, and others. Engage with dozens of like-minded industry professionals at the Annual ITSA Membership Meeting, where there’s ample time for business and personal discussions. Learn about industry advancements through the one-day technical program, participate in the half-day business meeting, and enjoy your peers in a relaxed atmosphere complete with fun social events.

Build awareness of your company and its products and services through valuable promotional opportunities—a centerfold listing in the SPRAYTIME® Newsletter, exposure on the ITSA website, and recognition at industry trade shows. Plus, ITSA Membership comes with an American Welding Society (AWS) Supporting Company Membership and up to five AWS Individual Memberships to give to your best employees, colleagues, or customers. Visit aws.org/membership/supportingcompany for a complete listing of additional AWS benefits.

For more information, contact Alfred Nieves at 800.443.9353, ext. 467, or itsa@thermalspray.org. For an ITSA Membership Application, visit the membership section at thermalspray.org.
For more than 90 years, **AAF International** has been providing filtration solutions for industrial processes around the world. Throughout our rich history, AAF International has tackled some of the most difficult applications in almost every industrial sector. From wet, sticky, oil-laden air to explosive and all types of metalworking dusts, AAF International has products and solutions to complement your operation. Our constant passion for innovative solutions has led us to offer the most reliable, efficient, and durable products available on the market today.

**TechMet Alloys LLC**, a TechMet company, has technical alliances in place to offer the finest tungsten products and powders in the world today. TechMet utilizes its metallurgical / process expertise and facilities to assist our customers with their tungsten carbide needs, inclusive of tungsten carbide hard-facing products and thermal spray powders.

TechMet began in 1998 with the purpose of providing “world class technology” to carbide fabricators, OEM producers, and coating service providers. Our staff has been making superior carbide products for over 40 years.

---

**BECOME A MEMBER**

Your company should join the International Thermal Spray Association (ITSA) now!

ITSA is a Standing Committee of the American Welding Society expanding the benefits of company membership. As a company-member professional industrial association, our mission is dedicated to expanding the use of thermal spray technologies for the benefit of industry and society.

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

---

**Thermion**

The Original and Reliable

**YOUR SOURCE FOR ANYTHING ARC SPRAY**

- Applying SafTrax TH604 Nonskid
- High Density Coatings
- Extended Boom for Extended Reach

New England • USA • Canada • Taiwan • Singapore • India • New Zealand

Czech Republic • Japan • South America • Oman • Saudi Arabia • Mexico

Middle East • S. Korea • Thailand • Singapore/Malaysia

360.692.6469 • info@thermioninc.com • Find out more at www.thermioninc.com
AISCO Adds Sales Manager

AISCO Metallizing Corp., Cleveland, Ohio, has added Nick Kinsinger as sales manager. Kinsinger is a 2006 graduate of the University of Akron with a bachelor’s degree in communications, public relations, and business management. He brings 11 years of management, sales, and operations experience. Kinsinger recently managed multiple branches for Yogurt Vi, Gia Lai, and LamHo Enterprises throughout Northeast Ohio. Prior to that, he managed the warehouse for Directtech of Akron, Ohio, and was a commercial property manager for Stark Enterprises Inc. “Nick’s experience in OSHA, safety, budgeting, and shipping will lead to successful business development and customer service for our industrial customers,” said D. Gary Caprio, president of AISCO Metallizing Corp.

CenterLine Welcomes Account Manager

CenterLine (Windsor) Ltd., Windsor, Ontario, Canada, has welcomed Kyle Smith as account manager. Smith has more than five years of sales, customer relations, and weld support experience in the automotive and medical industries. Prior to joining the company, he held positions with OPS Solutions, RoMan Manufacturing, and RoMan Engineering Services. He is a graduate of Central Michigan University with a major in marketing and concentration on professional sales. As account manager, Smith will represent CenterLine brand products and services within the U.S. market.

TCI Powder Coatings Hires Architectural and Building Products Segment Manager

TCI Powder Coatings, Americus, Ga., has hired Tom Hanson as architectural and building products segment manager. Hanson brings more than 20 years of industrial powder coating commercial experience to his new position. Prior to joining the company, he worked in sales, sales management, market development, and general management. Most recently, he held a regional sales manager position with PPG Industries. Prior to that, he worked for Spraylat andValspar. Hanson is a graduate of St. Cloud State University with a bachelor’s degree in business. He is also a former board member of the Powder Coating Institute.

Consultant Celebrates 50 Years in the Thermal Spray Industry

Donald Bradley, Vista, Calif., is celebrating 50 years in the thermal spray field this month. An engineering graduate of Pennsylvania State University, he began his career in 1967 as a field service engineer for Metco, a leading thermal spray company. He focused on learning several thermal spray processes. After 16 years with the company, he moved on to sales manager for then-Alloy Metals in Michigan. There he assisted in developing two patents for braze alloys. In 1989, he took on the position of West Coast sales manager in California until 2001. Later that year, Bradley began his own thermal spray consulting firm, Coating Solutions Inc. (CSI). While not ready to retire just yet, he is passing his knowledge on to his son Rick Davis, who joined CSI in 2012 to offer calibrations and equipment services. Bradley believes his success in the thermal spray industry is not just about technical knowledge but other focuses as well, such as customer service, networking, teamwork, and self education.
We’ve Come a Long Way…

For 70 years our history has been synonymous with thermal spray innovation, education, and standards development. As we celebrate this milestone and the progress we’ve made over the years, we invite you to learn more about us and our impact on the thermal spray industry.

Read our history at go.aws.org/AboutITSA
or find out more about us at go.aws.org/itsavid
Dimensional Restoration of High-Value, Precision-Gauging Fixtures by Cold Spray

By Julio Villafuerte

Precision gauges and fixtures to dimensionally check automotive components are typically made of heat-sensitive aluminum alloys using a variety of subtractive and/or additive manufacturing techniques — Figs. 1 and 2. Because of the required precision, the machining and finishing costs are often too high and, consequently, any machining mistake can become prohibited. Additionally, recurrent use of the tool leads to unavoidable wear and tear that eventually renders the tool unacceptable for the job even if there could be considerable value remaining.

Aluminum alloys used to fabricate these components are specially heat treated. These materials are sensitive to any process or procedure such as welding and/or conventional thermal spray, which create a heat-affected zone (HAZ) on the substrate. Not only would the material properties in the HAZ become substandard, but the dimensional accuracy of the tool would be lost due to thermal distortion.

Cold spray technology offers the ability of metal consolidation that can dimensionally restore these tools with minimum or no thermal effects. Therefore, manual and robotic cold spray technology, which is operated at low pressures and low temperatures, has become a reliable and effective tool for the industry — see lead photo.

Cold spray is a solid-state metal consolidation process that uses a high-speed gas jet to propel metal and other powder particles against a substrate where particles plastically deform and consolidate upon impact. The term “cold spray” refers to the relatively low temperature involved in the process, which is typically much lower than the melting point of the spray material and substrate. With the SST™ cold spray equipment, air can be used as a propellant gas and temperatures will be...
low enough not to thermally disturb the substrate material. After low-temperature dimensional restoration of the area, the new consolidated material can be effectively machined back to tolerance using standard machining techniques.

Because adhesion of the metal powder to the substrate and deposited material is achieved in the solid state, the characteristics of cold spray deposits are quite unique, making cold spray suitable for depositing well-bonded, low-porosity, oxide-free coatings. These attributes make cold spray uniquely suitable for depositing a range of temperature-sensitive materials in this application.

Tool issues such as over machining as well as wear and tear can be easily fixed with cold spray technology.

**Over Machining**

Quite often, there may be irreparable errors in the machining operation that renders the tool useless. In these cases, it is possible to cold spray an equivalent material to dimensionally restore functionality (Fig. 3) and then remachine to proper tolerance.

**Wear and Tear**

Wear and tear can be easily repaired by cold spray technology by filling in cold spray with the appropriate material (Fig. 4), then machining back to tolerance.

The SST cold spray technology has shown to be cost effective for manufacturers who used the technology to salvage a number of high-value fixtures that were either wrongly machined or simply worn beyond their useful life.

Julio Villafuerte (julio.villafuerte@cntrline.com) is corporate technology strategist at CenterLine (Windsor) Ltd., Windsor, Ont., Canada.
Four-day show will feature largest lineup of exhibitors, speakers, and educational sessions to date

FABTECH 2017 is headed to Chicago on November 6–9 and is shaping up to be the largest show in the event’s history. As North America’s largest forming, fabricating, welding, and finishing event, FABTECH is expected to draw more than 50,000 attendees to Chicago’s McCormick Place during the four-day show — Fig. 1. It will feature the largest lineup of exhibitors, speakers, and educational sessions to date. Across 750,000 sq ft of exhibit space will be 1700 exhibiting companies — Fig. 2.

The Industrial Revolution

The theme of the 2017 show is Industrial Revolution and attendees are invited to experience the future of metal fabrication and more. In addition to dedicated exhibit spaces for metal forming, fabricating, welding, and finishing, there will be an expanded Tube and Pipe Pavilion as well as a 3D/Additive Manufacturing Pavilion. In the 3D/Additive Manufacturing Pavilion, located in the grand concourse lobby, there will be presentations, education sessions, and networking opportunities for attendees interested in learning more about additive manufacturing.
Thermal Spray Course and Extended Educational Offerings

Julio Villafuerte, corporate technology strategist, Centerline (Windsor) Ltd., will present “What is Thermal Spray,” a half-day course on Monday, November 6, that will discuss most aspects of thermal spray coatings including thermal spray processes, equipment, pre and post treatment, applications, and industry usage. Processes covered will include flame spray (powder, wire, and rod), detonation spray, high-velocity oxyfuel spray (HVOF), cold spray, plasma spray, and twin wire electric arc spray. The course is free for FABTECH attendees and will be held in room N131. To register, visit fabtechexpo.com.

In addition to the thermal spray course, this year’s event will expand education programs targeting manufacturing’s hottest topics and emerging technologies. In total, FABTECH 2017 will have more than 150 educational sessions — the most in the show’s history. There are also expanded management and workforce development tracks, which cover in-demand executive and upper management concerns, such as tackling the manufacturing skills gap, economic outlook, reshoring, and new leadership strategies.

“Education is one of the most important aspects of FABTECH. With the increasing complexities of the processes and the business of manufacturing, we expanded our programming beyond the show floor to ensure we cover the needs of all industrial professionals with topics that affect their companies and careers,” said John Catalano, FABTECH show comanager and SME senior director.

Keynote Speakers to Motivate and Inspire

Industry and workplace transformation will be the focus of this year’s keynote speakers lineup. The keynote presentations kick off on Monday, November 6, with FABx Tech Talks, TED-style talks given by visionary industry leaders including Adam Genie, founder, Mobsteel; Jesse James, West Coast Choppers; and Karen Kerr, executive managing director, GE Ventures.

Later that morning, a panel of experts will focus on the evolution taking places in manufacturing during “Advanced Manufacturing for the Next Industrial Evolution.”

Tuesday, November 7, Richard Rawlings, cohost of Discovery Channel’s “Fast N’ Loud” series and founder of Gas Monkey Garage, a world-renowned hot rod shop, will share his entrepreneurial spirit and career to inspire manufacturers to innovate and take risks. Rawlings will speak about his businesses, challenges, opportunities, and pursuing one’s dreams with the discipline and persistence that is required for success. Rawlings will utilize any remaining time to answer audience questions about his life, the show, his business, and the building of hot rods.

In conclusion, on Wednesday, November 8, Matthew Luhn, one of the original creators of Pixar Animation Studios, will talk about inspiring creativity in the workplace. Luhn participated in building and sustaining the creative culture at Pixar from startup to the most successful filmmaking group in the history of Hollywood. His engaging and action-oriented talk will provide strategies on how to create a culture that encourages and nurtures new ideas, and embraces fear and failing as a necessary part of the creative process. He demonstrates how to empower relationships and build trust through authentic communication.

The Paley James Project

Jesse James of West Coast Choppers fame and world-renowned sculptor Albert Paley will use their unique styles and collaborate to make two sculptures. Each artist will start one sculpture but will finish the other.

The completed sculptures will be unveiled on November 6 and displayed throughout the show. Following FABTECH, the sculptures will be auctioned by Wright Auction House in Chicago with the proceeds benefiting the five FABTECH cosponsors, AWS, FMA, SME, PMA, and CCAI supporting grants and educational opportunities for careers in the metal working trades.
The project is sponsored by ESAB and the five FABTECH cosponsors, AWS, FMA, SME, PMA, and CCAI and will be documented by WXXI, Rochester, N.Y.’s PBS station. The 60-min documentary will be released following the sculptures, unveiling at FABTECH and will be available to PBS stations nationwide.

Online Registration

Admission to the FABTECH show floor is free if you register by November 3. After that date, the onsite registration fee is $50. To register, visit fabtechexpo.com.

Cindy Weihl (cweihl@thermalspray.org) is editor of SPRAYTIME.

Measure TSA on Stainless Steel Non-Destructively

- Ensure that TSA is being applied to specification
- Stop over-coating and save a fortune in wasted TSA material
- Measure thermally sprayed aluminum over stainless steel and other non-ferrous substrates

(860)683-0781
www.fischer-technology.com
sales@fischer-technology.com
Find us on LinkedIn!
Be Heard — What Standards Do You Need?
By Karen Sender, chair, AWS C2 Committee on Thermal Spraying

ITSA’s Annual Meeting and FABTECH are rapidly approaching. Each year, the AWS C2 Committee has a face-to-face meeting during the FABTECH show. At this year’s event in Chicago, Ill., C2 will meet on Monday, November 6, and guests are welcome.

During last year’s C2 meeting at FABTECH, we discussed reaching out to the ITSA members for suggestions on new standards the thermal spray community would like C2 to work on. It is our intention to do that at this year’s ITSA Annual Meeting on October 11–13 in Albuquerque, N. wMex. This is your opportunity to let us know what you feel are the pressing needs for new AWS C2 standards. We may not be able to implement every suggestion, but we will certainly try to work on those that are the most popular or relevant for our industry.

While we will solicit suggestions at the ITSA Annual Meeting, please feel free to send suggestions in advance to me (karen.sender@oerlikon.com) or to C2 Committee Secretary Jennifer Rosario (jrosario@aws.org).

Easier Access to AWS C2 Standards

Thanks to the efforts of the ITSA Executive Committee and the staff at AWS, we now have a link to the AWS C2 Committee and our C2 standards on the ITSA website at thermalspray.org. Simply click on “Thermal Spray Publications” on the menu bar, and you will be directed to these areas. Then click on “AWS Bookstore Publications on Thermal Spraying” to be directed to the AWS thermal spray standards, and you have the ability to purchase them online. You can also access these areas on the AWS website at aws.org.

AWS C2 Committee Election Results

It is with pleasure that I announce our 2017 election results for terms in effect for the next three years:

**Chairman:** Karen Sender  
**Vice Chairman:** Chip Arata  
**2nd Vice Chairman:** Dan Hayden

---

**ThermalSpray Powders**

Whether your finished part requires low, medium or high degrees of hardness, machinability, impact and abrasion or corrosion resistance, we have an alloy to meet your needs.

The table below describes some of the standard alloys available from AMETEK. We also manufacture custom atomized powders for special applications.

<table>
<thead>
<tr>
<th>Alloy</th>
<th>C</th>
<th>Cr</th>
<th>Fe</th>
<th>Ni</th>
<th>B</th>
<th>S</th>
<th>Cu</th>
<th>Mo</th>
<th>Co</th>
<th>No.</th>
<th>Hardness</th>
<th>Melt</th>
<th>Temp °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-91</td>
<td>3%</td>
<td>--</td>
<td>15%</td>
<td>7.5</td>
<td>1.5</td>
<td>2.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>15-24</td>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>P-91H</td>
<td>3%</td>
<td>--</td>
<td>15%</td>
<td>7.5</td>
<td>1.5</td>
<td>2.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>15-24</td>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>P-91S</td>
<td>3%</td>
<td>--</td>
<td>15%</td>
<td>7.5</td>
<td>1.5</td>
<td>2.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>15-24</td>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>P-21</td>
<td>1.5</td>
<td>1.5</td>
<td>10%</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>15-24</td>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>P-21H</td>
<td>1.5</td>
<td>1.5</td>
<td>10%</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>15-24</td>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>P-21S</td>
<td>1.5</td>
<td>1.5</td>
<td>10%</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>15-24</td>
<td>2000</td>
<td>3000</td>
</tr>
<tr>
<td>P-62</td>
<td>3%</td>
<td>14.0</td>
<td>4.2</td>
<td>11%</td>
<td>3.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40-60</td>
<td>3000</td>
</tr>
<tr>
<td>P-60</td>
<td>3%</td>
<td>16.0</td>
<td>4.2</td>
<td>11%</td>
<td>3.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40-60</td>
<td>3000</td>
</tr>
<tr>
<td>AMRK</td>
<td>3%</td>
<td>16.0</td>
<td>4.2</td>
<td>11%</td>
<td>3.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40-60</td>
<td>3000</td>
</tr>
<tr>
<td>AMR1</td>
<td>3%</td>
<td>17.0</td>
<td>4.2</td>
<td>11%</td>
<td>3.5</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40-60</td>
<td>3000</td>
</tr>
<tr>
<td>CR935</td>
<td>--</td>
<td>17.0</td>
<td>--</td>
<td>11%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40-60</td>
<td>3000</td>
</tr>
<tr>
<td>CR935</td>
<td>--</td>
<td>17.0</td>
<td>--</td>
<td>11%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40-60</td>
<td>3000</td>
</tr>
<tr>
<td>CR935</td>
<td>--</td>
<td>17.0</td>
<td>--</td>
<td>11%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>40-60</td>
<td>3000</td>
</tr>
</tbody>
</table>

**AMETEK®**

Specialty Metal Products  
Innovative & Advanced Metallurgical Technology  
U.S. HEADQUARTERS  
1085 Route 519  
Eighty Four, PA 15330 USA  
Tel: +1 724-225-8400  
Fax: +1 724-225-6622  
www.ametekmetals.com
Calendar

**OCTOBER 2017**
- **Powder Coating (PC) Summit**  
  October 3, 4 / Columbus, OH  
  pcimag.com
- **Additive Metal Manufacturing Conference**  
  October 10, 11 / Buffalo, N.Y.  
  aws.org/conferences
- **ITSA Annual Meeting and Technical Program**  
  October 11–13 / Albuquerque, N.M.  
  thermalspray.org
- **Advances in Manufacturing: Present and Future**  
  October 27 / Miami, FL  
  ameri.fiu.edu

**NOVEMBER 2017**
- **FABTECH**  
  November 9–11 / Chicago, IL  
  fabtechexpo.com

**DECEMBER 2017**
- **Power-Gen**  
  December 5–7 / Las Vegas, NV  
  power-gen.com

**FEBRUARY 2018**
- **Pipeline Coating 2018**  
  February 13–15 / Vienna, Austria  
  amiplastics-na.com/events

**APRIL 2018**
- **American Coatings Conference**  
  April 9–11 / Indianapolis, IN  
  american-coating-show.com

**MAY 2018**
- **International Thermal Spray Conference and Exposition**  
  May 7–10 / Orlando, FL  
  asminternational.org

**JUNE 2018**
- **NACE Bring on the Heat Conference**  
  June 5–7 / Houston, TX  
  nace.org
- **FABTECH Canada 2018**  
  June 12–14 / Toronto, Canada  
  fabtechcanada.com
- **POWDERMET 2018**  
  June 17–20 / San Antonio, TX  
  mpif.org

Is your event listed?  
Send calendar notices to  
SPRAYTIME®  
at thermalspray.org

Advertiser Index

Your SPRAYTIME publication is provided to you at no charge by our advertisers. We encourage you to thank these advertisers by visiting, contacting, and referring their products and services at every opportunity.

- Ametek .................................................................................................................................................................................. 21
- Alloy Coating ........................................................................................................................................................................... 14
- DeWal Industries ......................................................................................................................................................................... 5
- FABTECH 2017 ........................................................................................................................................................................ 20
- Fisher Technology ..................................................................................................................................................................... Inside Back Cover
- Hunter Chemical ........................................................................................................................................................................... 9
- Lineage Alloys ........................................................................................................................................................................... 8
- MEC ....................................................................................................................................................................................... Inside Front Cover
- Oerlikon Metco ........................................................................................................................................................................... 6
- Praxair Surface Technologies ...................................................................................................................................................... 7
- Thermach Inc. ............................................................................................................................................................................ 9
- Thermion ............................................................................................................................................................................... 13

SPRAYTIME | 2017 Third Quarter  
thermalspray.org
FABTECH 2017

CHICAGO
NOV 6 – 9

LEARN | MEET | EXPLORE | BE PART OF THE

INDUSTRIAL EVOLUTION

EXPERIENCE THE FUTURE OF
METAL FABRICATING AND MORE
ONLY AT FABTECH

#FABTECH17

NORTH AMERICA’S LARGEST METAL FORMING,
FABRICATING, WELDING AND FINISHING EVENT

REGISTER TODAY FABTECHEXPO.COM

THANK YOU TO OUR PLATINUM SPONSORS
Whatever your industry, application or process, Oerlikon Metco knows that solving your toughest challenges starts with the right material choice. Benefit from our deep understanding of your industry and processing needs, our strong technical competencies, and our commitment towards continuous innovation to provide you with outstanding reliability and performance.

Talk to us about your material challenges for
Thermal Spray ■ Laser Cladding ■ PTA ■ Additive Manufacturing ■
Brazing ■ Conductive Fillers ■ MIM ■ HIP ■ Weld Hardfacing

With Oerlikon Metco, your challenge is SOLVED!

Visit us at FABTECH 2017 Chicago, IL Booth# A3019
www.oerlikon.com/metco