ITSA 2017 Annual Meeting

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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.

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thermal spray and coatings industry. Visit spraytime.org to subscribe.
Stronghold Coatings Doubles Size with New Facility, Nations Coatings Sold to Investor Group

Stronghold Coatings, Franklin, Ohio, a provider of custom polymeric products and process development for thermal spray coating applications, has opened a facility to produce MM1018 in-house. According to the company, this marks the first time the MM1018 load-bearing repair product has been manufactured in the United States.

The 5000-sq-ft space, located at 2 Shotwell Dr., Franklin, Ohio, doubles the company’s size. Also, the area houses the engineering, research and development, and shipping and receiving departments, as well as corporate offices. Manufacturing the MM1018 product includes the acquisition of specialized mixing and blending machinery, plus more personnel.

Congressman Warren Davidson helped to christen the facility with a ribbon-cutting ceremony.

“This new space allows us to better serve customers in an ever-expanding array of industries,” said President Larry Grimenstein. “With the added room, our production team can manufacture and ship product without impeding on the space that our technical team requires as they work to solve complex wear or corrosion problems.”

In addition, Grimenstein — who founded Nations Coatings to serve the thermal spray market 25 years ago — has sold that company to Patrick Pelzer. All employees will be retained in their current positions and provide uninterrupted service to customers.

The sale allows him to devote more time to Stronghold Coating Systems, the North American supplier of Diamant products. He will continue to consult in process development for thermal spray coating applications outside a 100-mile radius of the Franklin, Ohio, location.

Grimenstein noted this sale not only provides him more time to give to the research and development needed to solve wear resistance, cost reduction, porosity, and other issues in a range of industries, but it also allows him to put his decades of experience in thermal spray technology to work as a consultant to thermal spray companies.
Titomic Granted U.S. Patent for Cold-Spray Titanium Additive Manufacturing

Titomic Ltd., Melbourne, Australia, has earned a U.S. patent for the metal additive manufacturing process it uses, known as Titomic Kinetic Fusion. It involves the cold-gas dynamic spraying of titanium or titanium alloy particles onto a scaffold to produce a load-bearing structure.

The patent, “A process for producing a titanium load-bearing structure,” is expected to provide the company with the foundation to expand its reach into the United States.

“This U.S. application has been pending since March 2013, so to date, we’ve only slowly progressed any discussions with potential major U.S. customers until our intellectual property was protected,” said Jeff Lang, Titomic CEO.

The company stated the new process is able to use powders costing approximately one fifth to one tenth that of traditional additive manufacturing powders, resulting in components up to 50% cheaper, and it can produce large-scale parts thirty times faster than other metal additive manufacturing processes.

A new Titomic facility is scheduled to open in December 2017, with production trials beginning in the first quarter of 2018. The Melbourne-based site will house a kinetic fusion system with a 40.5-m³ build area.

ITSA Names 2017 Scholarship Recipients

The International Thermal Spray Association (ITSA), Miami, Fla., has recently revealed its 2017 scholarship recipients. These three students each received a $2000 scholarship: Sadhana Bhusal of Miami, Fla., from Florida International University; Shalaka Shinde of Stony Brook, N.Y., from SUNY Stony Brook University; and Calvin Ng of Toronto, Canada, from the University of Toronto.

Applications are accepted annually, May 1 through July 15. Visit thermalspray.org/scholarship for the criteria details.
E.ON, Essen, Germany, is protecting all 60 steel foundations of the Arkona offshore wind farm in the German Baltic Sea with an anticorrosion coating. During the 25-year operating period, the metal-dissolving corrosion process will be reduced. Deposits into the sea will also be reduced by several hundred tons.

The company developed the thermal spray aluminum process for coating of the monopiles with engineers Rambøll Germany. The EEW and Krebs organizations then developed systems on behalf of the company to implement the process industrially at their locations in Rostock, Germany.

“We will now analyze and further optimize the process in order to use it for future offshore wind projects,” said Sven Utermöhlen, COO of E.ON climate and renewables.

During the coating process, a robot with two arc burners spays a 350-μm-thick layer of molten aluminum onto the foundations. It is executed under safety and environmental protection standards, and is largely dust free. The surface is sealed with resin as well. The process has mainly been used as corrosion protection for smaller steel components underwater or larger components above water. It is being applied for the first time on an industrial scale for the foundations of the Arkona turbines.

All 60 foundations with the thermal spray aluminum coating for the Arkona offshore wind farm have been produced. They have a maximum length of 81 m and a diameter of up to almost 8 m.

The Arkona project is 35 km northeast of the island of Rügen. The wind farm will have a capacity of 385 mW and supply up to 400,000 households with renewable energy from 2019 onward.

Sixty turbines made by Siemens will also be installed. These are based on monopile foundations in water with depths between 23 and 37 m.

Arkona represents a joint venture between E.ON and Statoil, the Norwegian energy company.

Curtiss-Wright Acquires Para Tech Coating

Curtiss-Wright’s surface technologies division, Paramus, N.J., has completed acquiring the net assets of Para Tech Coating Inc., a provider of parylene conformal coating services for aerospace and defense electronic components. It owns facilities in Aliso Viejo, Calif., Middleton, Conn., and Neenah, Wis.

“We are excited to combine Para Tech’s strong application engineering and equipment manufacturing capabilities with our existing network of parylene coating facilities,” said David Rivellini, vice president and general manager, surface technologies division. “We now have six locations worldwide providing parylene coating services and the infrastructure to facilitate further international expansion of this unique coating.”
Nissan Motor Co. Ltd., Yokohama, Japan, has licensed its machining roughening process, a proprietary technology used in making automotive engines, to German machine tool manufacturer Gebr. Heller Maschinenfabrik GmbH.

By using Heller machinery that incorporates this process, carmakers worldwide will be able to mass produce engines with energy-efficient cylinder bores featuring iron spray coating at a consistent quality level.

Conventionally, a tube-shaped cast-iron liner is inserted into an engine’s cylinder bore, where it serves to protect the reciprocating piston from heat and friction. To reduce engine weight and improve fuel efficiency, automakers have begun replacing these liners with 0.2-mm-thick iron spray coating primarily in high-performance and ultralow-emission cars. Also known as mirror bore coating for its mirror-like finish, iron spray coating helps manufacturers reduce engine weight and facilitate cooling.

The company’s machining roughening process is a type of hole-boring method that uses optimized tools and processing conditions to roughen the inner surface of a cylinder bore, so that the iron spray coating stays tightly bonded. By combining thermal spraying technology and this process, manufacturers can mass-produce engines with iron spray coating at a relatively affordable price.

Nissan first applied iron spray coating to the VR38DET engine of the Nissan GT-R, and then to low-emission engines for minivans and compact cars, without limiting its use for high-performance engines.

F. J. Brodmann Expands Hazardous Material Manufacturing

The Louisiana Office of State Fire Marshal has approved the processing of hazardous material for a new H-3 manufacturing facility for F. J. Brodmann & Co. LLC in Harvey, La. The projected product portfolio includes aluminum, cobalt, nickel, silicon, tantalum, titanium, tungsten, tin, zinc, and zirconium powders, both as pure metal and as metal alloy compositions. The micro- and nano-sized metallic powders are supplied as suspensions or liquid feed applications as well as mechano-fused composite powders suitable for 3D printing and other advanced manufacturing processes. Silicon-carbide-based compounds are supplied as prealloyed cermets, composite powders, or liquid suspension products. Based on the unique high temperature, low density, and semiconductor properties, silicon-carbide formulations are applied in high-performance aero turbines, space rockets, nuclear reactors, and high-power electric energy storage devices.
TWI Holds Cold Spray Technology Course

In September, TWI, Cambridge, UK, held a two-day course on cold spray technology. The training was attended by individuals from the UK’s Welding Alloys Group, Bharat Forge Ltd. from India, Dutch company KLM Engineering and Maintenance, TitanE Vallourec of France, and three of TWI’s PhD students. It was designed for materials and design engineers looking into the use of cold spray as a coating, repair, or additive manufacturing technology. The aim was to offer an appreciation of where cold spray fits into the wider scope of thermal spray technology, surface engineering, and coating processes.

Attendees were provided with an introduction to cold spray technology principles and processes alongside a comparison to other coating and repair processes. The training also included installation and demonstrations; information about characterization and properties, corrosion, mechanical testing, applications, and research; and using cold spray for repair.

The course was presented by the organization’s cold spray specialists Dave Harvey, Heidi Lovelock, and Phil McNutt.

In addition, TWI provided a cold spray training course for its Chinese industrial member, the Southwest Institute of Technique and Engineering, in January.

Attendees at both courses were presented with certificates of participation. The organization plans to offer more cold spray training in 2018.

CenterLine Adds Canadian Manufacturing Plant

CenterLine (Windsor) Ltd., a corporation that provides advanced automation processes and technologies meeting cold spray, resistance welding, and metal forming needs, will add a new manufacturing plant to its existing campus of three Windsor facilities on Morton Dr. in Ontario, Canada.

The greenfield construction project will be 85,000 sq ft in size, consisting of 72,000 sq ft of manufacturing space, and 13,000 sq ft of office space. It will be located on a 5-acre parcel and positioned to complement existing operations.

The division will be dedicated to manufacturing several welding and joining brand products that have been developed and launched by the company over the last few years.

Construction is expected to be completed in time for a spring opening.
Product Spotlight

Ethanol-Fueled HVOF Technology Produces High-Quality Coatings

The eGun™ is an ethanol-based system, liquid fuel HVOF that produces high-quality coatings. It consists of a touch-screen panel, electric and gas/fuel control modules, a cooler, a PF-50 powder feeder, a jam box, a hose and cable package, as well as the e-stop and exhaust flow sensor. The touch-screen system brings flexible and accurate process control to your fingertips. The product separates fuel, gas, and electrical components into distinct modules. Flow, pressure, and temperature sensors have been integrated to monitor the process and provide warnings when the system is operating outside of its specified limits. In addition, it is capable of operating the JP-5000® Model 5220 kerosene HVOF torch. This allows users to choose either the new gun or conventional technology. Benefits include a larger window of operation vs. kerosene, no ash formation, less fumes, consistent fuel, smooth system starts and rampups, ability to run very fuel-rich, create new coatings, coating integrity and uniformity, higher combustion chamber pressure resulting in higher particle speed, 30 to 50% reduction in oxygen usage, and up to 50% reduction in required cooling power.

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Metal Powder Program for Additive Manufacturing Gets Released

The Amperprint® range of gas atomized metal powders are designed for additive manufacturing. In alignment with its users’ needs and latest market developments, the company offers high-alloyed nickel-, cobalt-, and iron-based powders of all major standard compositions as well as customized solutions. This enables production to ramp up efficiently while keeping physical and chemical powder properties consistent. The high-quality, nickel-based powders are high strength and oxidation resistant even at the highest temperatures. The cobalt chrome alloys can be applied in biomedical applications. They are also suitable for demanding high-temperature applications such as aero engines. The iron-based powders have a resistance to abrasion, wear, and corrosion. These powders combine high strength and hardness, which makes them applicable for uses such as mechanical engineering, medical, or functional prototypes.

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Plug-and-Play Dust Collector Maximizes Production Uptime

The Packaged Downflo Evolution dust collector for collecting industrial dust and fumes offers facilities in the metal fabrication industry a solution for protecting employees and property from dust while maximizing production uptime. It features a modern design that complements manufacturing environments. The filtration system is available in four- and six-cartridge models. It includes benefits such as pulse-jet cleaning, airflow management, and filtration efficiency bundled into a turnkey system. The filtration technology features horizontal cartridge filter elements placed above the airstream, allowing gravity to assist in removing dust-laden air. Along with pulse-jet cleaning, the down-flow action increases filtration capacity and reduces maintenance. The system is preassembled and shipped with integrated electrical controls, motors, and fans.

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Standard Provides Recommendations for Thermal Spraying

The ISO 12679:2011 standard includes general guidelines for the workmanlike production of metallic, metal-ceramic, oxide-ceramic, and plastic coatings by means of thermal spraying on metallic and nonmetallic parent materials. The standard provides recommendations for an appropriate and practical spray setup, faultless manufacturing, monitoring, quality assurance, as well as nondestructive and destructive examinations on the component and accompanying specimen. It describes details about negative effects that can occur and gives advice on how to prevent them. The standard can be used for contract purposes.

International Organization for Standardization
iso.org / +41 22 749 08 88

Report Shows Expected Growth and Trends for Thermal Spray Market

The Ceramic Coating for Thermal Spray Market report explains and forecasts the global ceramic coating for the thermal spray market based on explanation, application, organization size, distribution mode, and region. The report analyzes every subsegment regarding the individual growth trends, contribution to the total market, and the upcoming forecasts. It aims to help readers make informed decisions, understand opportunities, plot effective business strategies, plan new projects, and analyze drivers and restraints. The analysts forecast the global thermal spray market to grow at a compound annual growth rate of 8.28% during the 2017–2021 period. To calculate market size, the report considers the revenue generated from the sale of thermal spray products. The market is divided into the following segments based on geography: Americas, Asia Pacific, Europe, the Middle East, and Africa. The report covers market landscape and its growth prospects over the coming years. It also includes a discussion of the key vendors operating in this market.

360 Market Updates
360marketupdates.com / (408) 520-9750
ITSA Membership

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.

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The International Thermal Spray Association is closely interwoven with the history of thermal spray development in this hemisphere. Founded in 1948, and once known as Metallizing Service Contractors, the association has been closely tied to most major advances in thermal spray technology, equipment and materials, industry events, education, standards and market development.

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

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. ITSA invites all interested companies to talk with our officers and company representatives to better understand member benefits.

OFFICERS

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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.

ITSA MEMBER NEWS

Tradeshow Assessment for ITSA Member Eliminated

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 more than 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.
ITSA Welcomes New Members

Surface Modification Systems (SMS) Inc. is a provider of advanced coatings for a wide range of industries. The company has two facilities with thermal spray, diffusion coatings, plasma electrolytic oxidation, sol-gel, and other internally developed methods of applying protective and functional surfaces. Thermal spray capabilities include air and vacuum plasma, wire arc, HVOF, detonation spraying, low pressure cold spray, combustion wire, and powder. A wide range of diffusion coatings can be applied including borides, carbides, silicides, and aluminides. Thin film ceramics can be deposed using a proprietary atomization process. A full machining and grinding shop complements its coating operations.

SMS is AS9001/ISO9001 registered and a FAA repair station. Its coating services are supported by a metallurgical laboratory, which houses scanning electron microscopes, x-ray diffraction, spectroscopy, oxygen analysis, resistivity and dielectric strength testing, along with tensile, hardness, and microhardness testers.

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.

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Kelly Watson, president of Watson Grinding & Manufacturing, Houston, Tex., has received a 2017 Service Award from the Valve Manufacturers Association of America (VMA) during its annual meeting. The award is given to a leader from the membership, end users, the trade press, and others who have significantly contributed to the advancement of the industry. Watson Grinding & Manufacturing is a full-scale machine shop offering a multitude of processes and solutions for customers. The company specializes in carbide and ceramic thermal spray coatings via high velocity oxygen fuel and plasma thermal spray applications.
ITSA Scholarship Recipients Look Forward to the Future
By Kristin Campbell

This talented trio recently received funds to support their postgraduate education

Three promising PhD candidates — Xingye Guo, Hwasoo Lee, and Ville Matikainen — each earned $2000 scholarships from the International Thermal Spray Association (ITSA) last year. Upon hearing the news, the gentlemen felt excited, enthusiastic, and humbled. Since then, the financial assistance has helped pay for tuition, fees, books, and other study-related expenses.

These impressive individuals enjoy performing research in the field, ranging from thermal barrier coatings to high velocity air fuel (HVAF) sprays, and presenting their studies at conferences. They also hope to make a positive impact in the industry.

Get to know more about the trio’s backgrounds and accomplishments as they work toward achieving doctorate degrees.

Xingye Guo

After devoting 4½ years in the thermal spray industry, and more than 10 years in materials sciences, Xingye Guo thoroughly understands the process and technology of coating development.

“I believe I can make an impact in developing new thermal barrier coatings with better performance,” he said.

Guo’s drawn to this area and thermal spray technology, such as air plasma spray and electron beam-physical vapor deposition. One challenge he has encountered in the field is finding a new thermal barrier coating material with a lower thermal conductivity and a higher coefficient of thermal expansion operating above 1300°C.

Currently, Guo’s a PhD candidate in the Mechanical Engineering Department at Indiana University – Purdue University Indianapolis — Fig. 1. He started this endeavor in January 2013, traveling from China to the United States after graduating from the University of Science and Technology Beijing with a master’s degree in materials science and engineering, as well as the Harbin Institute of Technology with a bachelor’s degree in the same subject.

His PhD thesis is “Design and Characterization of Novel Lanthanum Zirconate (La2Zr2O7) Based Thermal Barrier Coating.” The project is sponsored by an award from the United States Department of Energy in collaboration with Praxair Surface Technologies, Changwon National University in Korea, and Argonne National Laboratory.

“We design and fabricate La2Zr2O7 coatings with several new architectures to improve the thermal and mechanical properties and thermal cycling durability, including multilayer architecture and the blended composite coating architecture,” Guo explained.

More recently, he’s performed modeling works for nano-tensile and nano-shear experiments at the interface of zirconate and nickel. The purpose is to detect the failure mechanism of the thermal barrier coating at the interface between the top and bond coats.

Before the end of this year, Guo plans to give a final PhD defense. In the meantime, he works in the advanced materials and manufacturing technology lab at Indiana University – Purdue University Indianapolis supervised by Professor Jing Zhang. After graduation, Guo hopes to continue his work with thermal spray coatings.

“In the future, I would like to find a postdoctoral position in a university or national lab,” Guo said. He also aspires to work on a thermal barrier or abrasive coating project, keep investigating advanced thermal barrier coating materials to improve gas turbine engine performance, and be a professor.
Since Hwasoo Lee’s first encounter with thermal spray while serving in the Korean Air Force from 2007 to 2010, he’s been focused on a career in material research related to coating. “This work piqued my curiosity...I became an expert at how materials were applied, the best materials to use in given situations, and the nuances of airplane maintenance, corrosion prevention engineering, and coating technology,” Lee recalled.

After an honorable discharge, he returned to the academic world and participated in study-abroad programs. “I made a point to extend my work and learning beyond the classroom, for example, by participating in competitions that tested my ability to apply theoretical learning to real-life practical challenges,” Lee said.

He joined the Material Processing Laboratory at Ajou University, South Korea. During an internship, he investigated materials including Bi₂O₃-ZnO-Nb₂O₅, which gave insight into ceramics and powder metallurgy. After completing this undergraduate work, he started a master’s program in the Department of Materials Science and Engineering, also at Ajou University.

In addition, he collaborated with the Korea Automotive Technology Institute on a project examining the recycle process of a steering arm and compression rod, where a cold gas dynamic spray process was applied.

Lee chose to pursue his PhD at the Center for Thermal Spray Research at Stony Brook University in New York — Fig. 2. “It just blew my mind that this laboratory was playing such a large role in thermal spray research, providing a pathway for further exploration in functional materials through a flexible and scaleable manufacturing process,” he said.

He has also worked with colleagues on additive-layered fabrication and additive-subtractive fabrication of functional materials such as thermopiles.

“My interest is on functional material, and by adopting these concepts supervised by Professor Sampath, we have been able to investigate materials for application in energy-harvesting devices, specifically thermoelectric generators using thermal spray,” Lee said.

He’s been appreciative of the support provided by the Stony Brook Industrial Consortium for Thermal Spray Technology, and aims to achieve a PhD degree by either August or December of 2018. “I imagine myself being a researcher in R&D for companies,” Lee said about the future, “and I am open to any location or field.”

Ville Matikainen

For nearly a decade, Ville Matikainen has worked with thermal spraying. “It definitely feels like a perfect field for me,” he said. What interested him is the complex chain of events that transforms the feedstock material into a high-performance surface that often could not be produced in any other way. This combination includes complexity of the processes, “violent” processing of the materials (high temperature + high velocity), and an incredible amount of possible process and material combinations to produce the coating.

Advice for Students
Thinking of Studying Thermal Spray

PhD candidates Xingye Guo, Hwasoo Lee, and Ville Matikainen shared their words of wisdom for students considering thermal spray as a major.

“Thermal spray technology includes a wide variety of techniques,” Guo said, “that can enhance the thermal/mechanical performance and stability of machine parts used in aeronautics, automobiles, and the mining industry. Thermal spray technology plays a very important role in modern life. Studying this area, you can make a big impact in the manufacturing industry.”

In addition, Lee noted a background in math, physics, chemistry, and engineering will greatly help. “However, the most interesting part about studying thermal spray is getting to know the people who study in the field of thermal spray, because we feel the same way,” he emphasized.

Matikainen encouraged jumping on board and learning about thermal spray. “Firstly, it is a fascinating topic with so many areas and aspects to focus on,” he said. “Secondly, studying the processes, materials, and coatings gives the student knowledge that can be utilized in many closely related fields in working life (thermal spraying, additive manufacturing, welding).”
“I cannot wait to see how the whole industry develops, knowing that there are many people and companies that do not even know (yet) about the potential of thermal spraying,” said PhD Candidate Ville Matikainen from the Tampere University of Technology in Finland.

“I find challenges in every aspect of thermal spraying,” Matikainen added. “The closer you start to look at different steps of the process, and the factors that affect the resulting coating, the more you have questions and things to find out. Instead of feeling frustrated, I find this interesting, and it is guaranteed that there are always new things to learn.”

After earning a bachelor’s degree in metal materials at the Tampere University of Technology (TUT), located in Finland, he moved to Sweden in 2009 for an internship at Volvo Aero Corp.’s thermal spray unit.

“Seeing industrial manufacturing at that scale was amazing. As every work step needs to be possible to backtrack, the thermal spray unit producing coatings for the aerospace industry was probably the best place to see and learn how things are done,” Matikainen said.

Next, he returned to TUT and began a research assistant role. His master thesis in 2012 was on plasma sprayed oxide ceramic coatings, yet he ultimately decided to focus on cemented carbide materials sprayed with modern HVAF — Fig. 3.

“My current research is related to the HVAF spray process, which in principle is similar to the HVOF process but uses compressed air as the oxidizer instead of the pure oxygen, effectively reducing the combustion temperature,” Matikainen said. “This allows the spray process to take place at temperatures closer to the actual melting points of the most common metal alloys used in cemented carbides.”

His TUT group is working with the Finnish industry on case studies as well.

Next, he plans to earn a PhD after the summer of 2018. “I like doing research, and it is what I would like to continue doing after graduation,” Matikainen concluded. “And no question about it, definitely within the thermal spraying industry.”

Kristin Campbell (kcampbell@aws.org) is an editorial staff member of SPRAYTIME®.
Albuquerque, N. Mex., played host to the 2017 International Thermal Spray Association (ITSA) Annual Meeting on October 11–13. The three-day event kicked off with a meet and greet reception on Wednesday evening at the Albuquerque Marriot Pyramid North hotel. Attendees from more than 28 companies used the opportunity to network before the start of meetings and presentations.

Focus On Coatings Evaluation

ITSA Chairman Jim Ryan welcomed attendees to a full-day of technical presentations on Thursday, October 12 — Fig. 1. Ryan began the meeting by highlighting ITSA’s 70th anniversary this year. He touched upon the ways the organization has grown and introduced American Welding Society (AWS) staff members who now oversee the day-to-day operations of ITSA, including ITSA Program Manager Alfred Nieves, Administrative Assistant Lisa Cohn, and AWS Senior Associate Executive Director Cassie Burrell. Ryan then had all attendees in the room introduce themselves.

The days’ presentations focused on coating evaluations and were led by industry experts including Chin Ma, development engineering manager, Curtiss Wright; Ergin Gungor, senior process engineer, Curtiss Wright IMR Test Labs; Phil Bretz, president and CEO, Metcut Research Inc.; Jim Weber, president, James K. Weber Consulting LLC; Deidre Hirschfeld, manager of the Coatings and Additive Manufacturing Department, Materials Science and Engineering Center, Sandia National Laboratory; Dan Hayden, president, Hayden Corp.; Bob McDemus, Thermal Spray Depot; Alan Burgess, SprayWerks; and Chip Arata, Matheson Gas — Figs. 2 and 3.

Attendees were given the opportunity to ask questions following each presentation, which produced informative conversations about best practices and new technology.

C2 Committee Updates

David Lee, proxy C2 committee speaker and ITSA vice chair, gave attendees an update of AWS’s C2 Committee on Thermal Spray. This committee establishes standards on thermal spray design, manufacture, inspection, test methods, as well as develops guides. It also works on standardizing thermal spray symbols and definitions. The committee currently has 24 voting members, eight advisors, and five new applicants.

Lee also asked members to give recommendations for areas in the industry that need standards and guides.

**New Member Introductions**

At the conclusion of the days presentation, Ryan introduced new 2017 ITSA members and asked those in attendance to share more about their companies and what they hope to gain from their new membership. New members in attendance included Matthew Watson, HFW Industries; Junichi Takeuchi, Tocalo Co. Ltd.; Vincent Lawless, TechMet Alloys; and Dave Kolstad, AAF International — Fig. 4.

**Albuquerque International Balloon Fiesta**

The last day of the annual meeting started with a 4:30 a.m. wakeup call as members and guests boarded a bus to attend the 2017 Albuquerque International Balloon Fiesta. The yearly festival held during early October saw over 600 hot air balloons take to the sky over the nine-day event. ITSA members were able to enjoy the unique event from a private area that provided an up-close look at the balloons — Fig. 5.

**Annual Meeting**

Following a fun morning at the balloon festival, members gathered a final time for ITSA’s Annual Membership Meeting. The meeting was called to order by Ryan who then went over financials and approval of the 2016 meeting minutes. Vice Chair David Lee then discussed the 2018 meeting location. Members decided the exact location would be put up for a vote and announced at a later time. Other topics discussed during the meeting included the membership committee, scholarships and education, future technical programs, and general business items.

If you are interested in becoming an ITSA member company or want to find out more about the organization, visit thermalspray.org.

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**Fig. 3** — Speakers at the 2017 meeting included (from left) Chip Arata, Matheson Gas; Jim Ryan, ITSA Chair; Dan Hayden, Hayden Corp.; Bob McDemus, Thermal Spray Depot; Philip Bretz, Metcut Research Inc.; Jim Weber, James K. Weber Consulting LLC.; Chin Ma, Curtiss Wright; David Lee, ITSA vice chair; and Alan Burgess, SprayWerks.

**Fig. 4** — New ITSA members introduced at the meeting are (from left) Dave Kolstad, AAF International; Matthew Watson, HFW Industries; Junichi Takeuchi, Tocalo Co. Ltd.; and Vincent Lawless, TechMet Alloys.

**Fig. 5** — Members enjoyed the Albuquerque International Balloon Fiesta.
Reaffirmation of AWS C2.25/C2.25M
By Karen Sender, chair, AWS C2 Committee on Thermal Spraying

The AWS C2 Committee on Thermal Spraying is pleased to announce it is reaffirming AWS C2.25/C2.25M, Specification for Thermal Spray Feedstock — Wire and Rods, replacing the version published in 2012. This standard lists a number of commonly used thermal spray wire and rod chemical compositions including
- Ferrous solid wires
- Nonferrous solid wires
- Cored composite wires
- Ceramic rods.

Moreover, it provides standards that help ensure procurement of wire and rod products completely appropriate for the thermal spray process, such as
- Wire and rod diameter tolerances
- Acceptable spool sizes
- Packaging, identification, and marking requirements.

It makes procurement of wire and rod feedstock materials for thermal spray easy and efficient. Look for AWS C2.25/C2.25M to soon be available on the AWS Bookstore website (pubs.aws.org) or through the link provided on the ITSA website to the C2 Committee and Published Standards (thermalspray.org/publications).

Guidelines for submitting a SPRAYTIME® feature article

Have you thought about writing a feature article for consideration in SPRAYTIME®? If so, our staff stays on the lookout for original, noncommercial, practical, and hands-on stories. Potential ideas to focus on include a case study, recent company project, tips for handling a particular process, and so on.

Here’s an easy breakdown of our guidelines:

- The text of the article should be about 1500 to 2000 words and provided in a Word document.
- Line drawings, graphs, and photos should be sent in high-resolution jpeg or tiff files with a resolution of 300 or more dots per inch.
- Plan on one figure for every 500 words, and provide captions for every image. Also, if a nice lead photo is available, please include it for review.
- The authors’ names, along with the companies they work for and their positions, should be listed.

If you’d like to discuss a particular idea or email a submission for evaluation, please contact Editor Cindy Weihl at cweihl@thermalspray.org.
Calendar

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

- **International Conference on Metallurgical Coatings and Thin Films**
  April 23–27 / San Diego, CA
  www.2.avs.org/conferences/icmctf

- **Offshore Technology Conference**
  April 30–May 3 / Houston, TX
  2018.otcnet.org

MAY 2018
- **FABTECH Mexico**
  May 2–4 / Mexico City, Mexico
  mexico.fabtechexpo.com

- **Society of Vacuum Coaters — TechCon 2018**
  May 5–10 / Orlando, FL
  svc.org

- **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

- **Turbo Expo**
  June 11–15 / Lillestrøm (Oslo), Norway
  asme.org/events/turbo-expo

FABTECH Canada 2018
  June 12–14 / Toronto, Canada
  fabtechcanada.com

POWDERMET 2018
  June 17–20 / San Antonio, TX
  mpif.org

OCTOBER 2018
- **EuroBLECH 2018**
  October 23–26 / Hanover, Germany
  euroblech.com/2018

NOVEMBER 2018
- **FABTECH**
  November 6–8 / Atlanta, GA
  fabtechexpo.com

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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