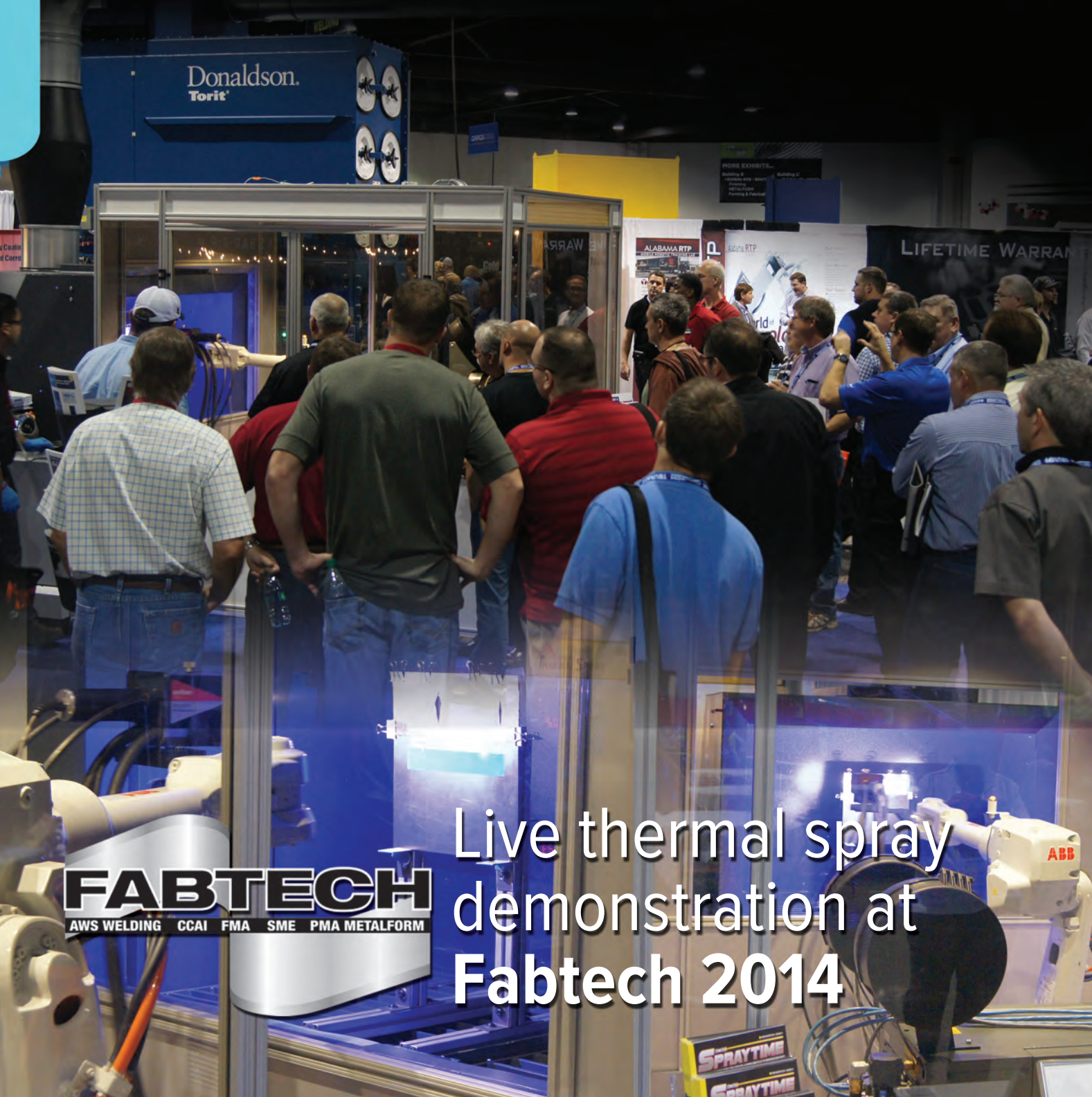


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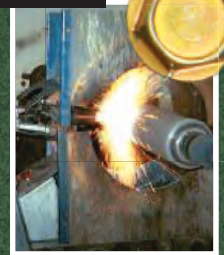
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**Mission:** To be the flagship thermal spray industry newsletter providing company, event, people, product, research, and membership news of interest to industrial leaders, engineers, researchers, scholars, policy-makers, and the public thermal spray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

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**Joe Stricker** Technical Editor

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**Where is your article?** We encourage you to send articles, news, announcements and information to [spraytime@thermalspray.org](mailto:spraytime@thermalspray.org).

**Cover:** Crowd watching the first-ever LIVE thermal spray demonstration at Fabtech exhibited by the International Thermal Spray Association.

**See article page 4.**

**Photo Credit:** Jeff Abelson



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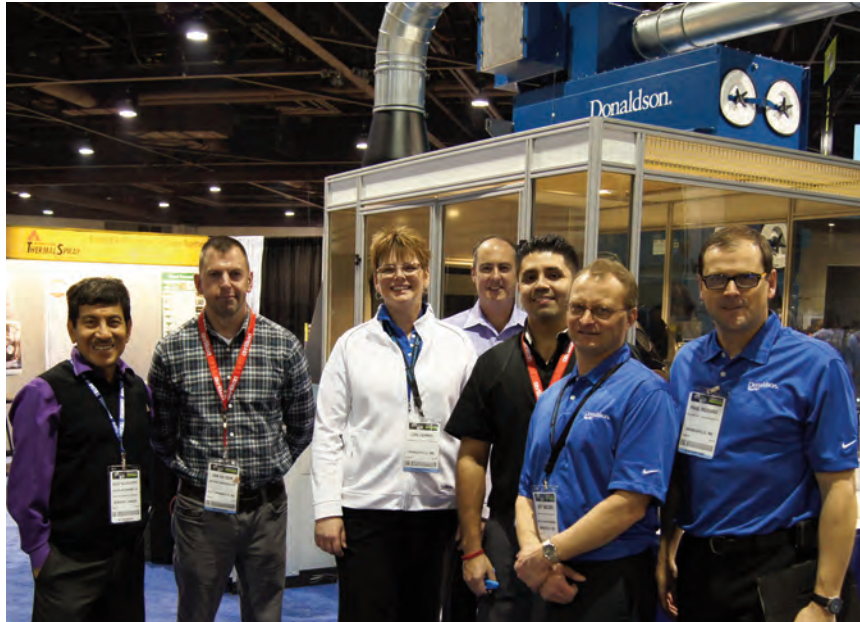
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## LIVE Thermal Spray Demonstration

The International Thermal Spray Association, a standing committee of the American Welding Society, exhibited a live demonstration of a thermal spray process during the FABTECH Show.

"After seven years of hosting a Thermal Spray Pavilion on the welding show floor and five years of presenting the "What Is Thermal Spray" class, we are thrilled to expand upon our efforts to show everyone what thermal spray looks like and educate on what can be done with the process. We were always excited to tell our story, but being able to let people see and feel the process takes it to another level" stated Bill Mosier, ITSA Chairman and President of Polymet Corporation in Cincinnati, Ohio.

ITSA was spraying business cards every hour on the hour during the exposition so that everyone could leave with an actual coating example. Additionally, industry representative were on hand to narrate and answer questions from the attendees.



The "Live Demo" Committee (left to right) Julio Villafuerte-Centerline Windsor, Dan Hayden-Hayden Corporation, Lori Lehner-Donaldson Torit, Tim Connelly-Greenbelting Industries, Juan Medrano-Oerlikon Metco, Jeff Abelson and Pual Richard-Donaldson Torit.

Committee members not pictured: Kathy Dusa-ITSA, Adriana Fitting and Karen Sender-Oerlikon Metco, Cory Gunderson, Donna Wing and Vivian Mui-Donaldson Torit, Bill Mosier and Bob Unger-Polymet, Jim Ryan-Carpenter Powder Products.

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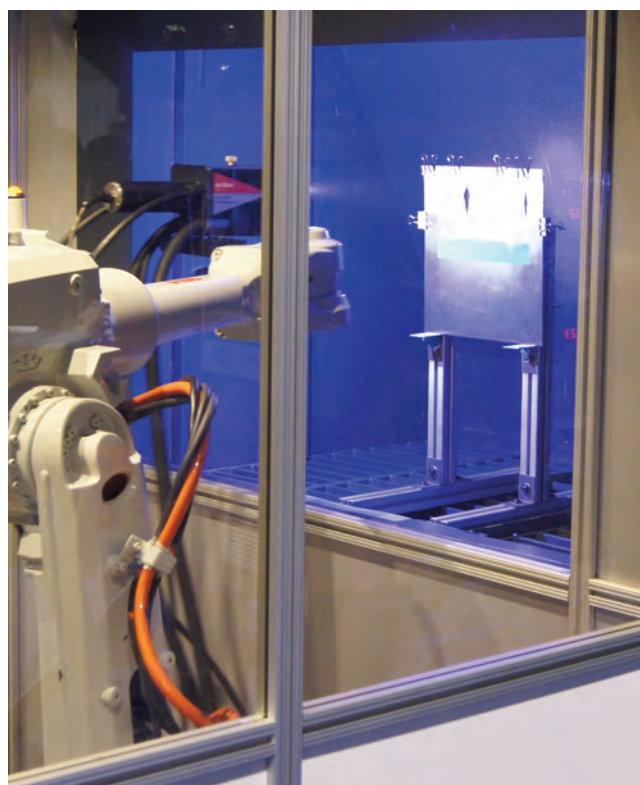
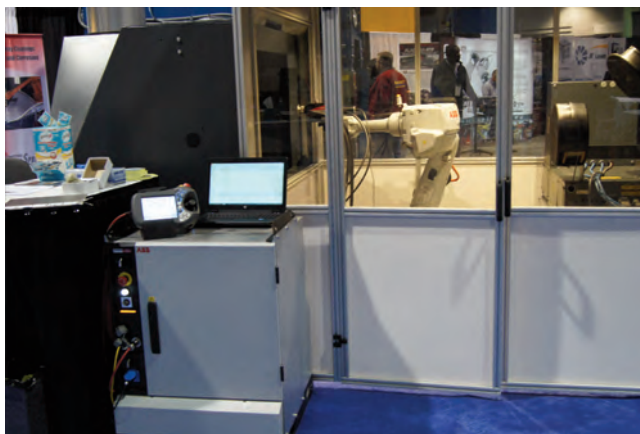


Pictured: John Woolever, Donaldson Torit. Equipment: Oerlikon Metco SmartArc PPG Wire Arc Spray Gun on an ABB 2600 robot spraying Polymet Pmet540 zinc wire on the back of business cards. The spray booth was provided by Hayden Corporation and the Torit® Downflo Evolution Air Filtration System was provided by Donaldson Torit and its partners.





Various angles of the spray booth.



This project was so successful and provided numerous opportunities to talk about the thermal spray processes and benefits.

ITSA plans to repeat this live exhibition next year at Fabtech 2015 November in Chicago to further thermal spray education in the industrial community.

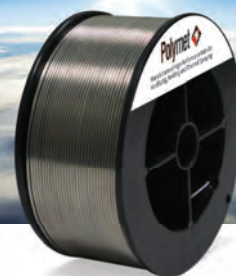
We hope you will join us by exhibiting your company in the thermal spray demonstration area.

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## Tungsten Carbide Ball Valve Components Withstand Sand Slurry Test

Watson Grinding and Mfg. and Oil States Industries announce metal seated ball valve with tungsten carbide coating was unaffected by sand slurry test environment.

The 2-1/16 in. 5,000 psi 4130 alloy steel ball valve with tungsten carbide coated ball and seat components spent approximately 50 hours in service.

The API 6AV1 Class II test specification consists of 50 hours flow with a sand slurry media flowing through the valve, then subsequently 500 open/closed cycles with sand slurry flowing through. The acceptance criterion of zero leakage was met. Test media was a water/sand mixture; with which the specification has strict requirements for sand particle size, sand content, and viscosity. Test temperature was ambient, pressure was 5000psi maximum.

The purpose of the R&D was to study the amount of leakage. This test was performed for no specific application; however, emergency shut-down valves (ESDVs) require this certification.

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About Oil States: Oil States International, Inc. is an energy services company with a leading market position as a manufacturer of products for deepwater

production facilities and certain drilling equipment, as well as a provider of completion services and land drilling services to the oil and gas industry. Oil States is publicly traded on the New York Stock Exchange under the symbol "OIS".

**For more information**, please visit Oil States International's website at <http://www.oilstatesintl.com>.

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## Fault Finding and Safety at Your Facility

Everyone who gets up in the morning to go to work fully expects that they will return home at the end of the day. Doesn't always happen! And whose fault is that?

Most of us drove to work today. How many of us did a simple walk around pre-operational check of the vehicle before we started driving? How many of us checked that the tires were properly inflated? That both headlights and taillights were operational? That the defroster and windshield wipers were working? How many of us even looked at the car before we jumped in and started driving? Not many!

So let's say we're driving down the road and an improperly inflated tire breaks a bead and the tire fails catastrophically. Our car swerves into an oncoming lane hitting another car; both cars are pushed into the median and roll-over. Someone is killed. Whose fault is it? Was it the tire manufacturer's fault because they did not design a tire that could operate safely when under-inflated? Maybe it was the fault of the mechanic who did not notice and did not properly inflate the tire the last time we had the car in for service. Or maybe it was the oncoming driver's fault for not anticipating that our disabled car would swerve into their lane. It could not possibly have been our fault for not doing something as basic as a pre-operational check!

When we arrived at work, did we do a pre-operational check of our machine before we turned it on? Were all the guards in place? Is the area well lighted? Any trip hazards around the machine? Is there anything in the vicinity that could cause us problems? Are we fit, focused, and familiar with the level of safety required to do the job? If there is a potential problem, are we going to say anything to anyone?

There are few things in our lives that are guaranteed. Someone once said that the only certainties in life are death and taxes. But I can guarantee you that if someone is seriously injured or killed in your workplace there will be finger-pointing, there will be misplaced blame, attempts to absolve guilt, and there will be litigation. It is simply human nature. It is simply

the nature of our litigious society. Whoever's at fault, it will be mostly the fault of the person or entity with the deepest pockets!

Regardless of your level of responsibility, the mere accusation of negligence can make your life more nightmarish than even Hollywood can portray.

Stop unsafe work practices in your facility. Do it now!

Charlie Howes is a semi-retired safety consultant, licensed private investigator, and technical writer with over 20 years of experience in the welding & thermal spray industries.

**For more information**, contact him at [www.charleshowes.com](http://www.charleshowes.com) or Twitter: @cphowes.



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## Occupational Safety and Health Administration Questions and Answers

(OSHA is the main United States Federal Agency charged with the enforcement of safety and health legislation.)

**Question #1:** Does OSHA cite employers (every time) for not having a machine properly color-coded when they conduct a survey of a machine? If not, could you give me an example of when a citation may be issued on this subject?

**Response:** No, OSHA does not cite employers every time for not color-coding a machine or parts of a machine. Under 29 CFR 1910.144, there are specific color-coding requirements for items such as safety cans or other portable containers of flammable liquids and for devices such as emergency stop buttons, switches, and bars, but beyond that, the standard does not specify what machines or portions of machines need to be color-coded. The standard specifies that yellow is to be used to identify physical hazards such as striking against, stumbling, falling, and "caught in-between." The idea behind color-coding is to make the employee aware of potentially hazardous conditions.

During an inspection, if a hazard is present that is related to color-coding or the lack thereof, then OSHA could issue a citation for a violation of 1910.144. A situation of where a citation might be issued for lack of color-coding is a machine guard that, while protecting an employee from one hazard, exposes that employee to another hazard, such as a trip hazard or an overhead "struck-by" hazard. Each circumstance needs to

be evaluated individually to determine the appropriateness of color-coding. It must be emphasized that color-coding in no way eliminates the need for adequate guarding of the piece of equipment. Physical hazards created by operating machinery must be addressed by compliance with Subpart O of 29 CFR 1910, Machinery and Machine Guarding.

**Question #2:** What parts of a machine need to be color-coded? For example, ANSI states, "the outside of guards covering belts, pulleys, rims of pulleys or filler plates on band saws, etc."

**Response:** Neither 29 CFR 1910.144, nor ANSI Z535.1-1998 specifies which machine parts require color-coding. If there is a portion of a machine that creates a particular hazard and the use of color-coding will enhance employee safety, then that part or hazard shall be color-coded in compliance with 29 CFR 1910.144. The employer has the responsibility to evaluate the machine and determine if any portion needs to be color-coded. It should be made clear that the ANSI standard is a guideline. OSHA has, in 1910.144, a standard for color-coding, and this is what the Agency will enforce.

*---compiled from OSHA correspondence.*

Author Charlie Howes is a semi-retired safety consultant, licensed private investigator, and technical writer with over 20 years of experience in the welding and thermal spray industries.

**For more information,** contact him at [www.charleshowes.com](http://www.charleshowes.com) or Twitter: @cphowes.

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## Ardleigh Minerals Receives Fifth Weatherhead 100 Award for Growth

Ardleigh Minerals, Inc. has earned the 2014 Weatherhead 100 Award as one of the fastest-growing companies in Northeast Ohio. The Weatherhead 100 is awarded by the Weatherhead School of Management at Case Western Reserve University. The announcement was made by Ernest Q. Petrey, Jr., Ardleigh's Sales & Marketing Manager.

"We are proud of the fact that this was the eighth Weatherhead 100 Award that my companies have earned and the fifth for Ardleigh Minerals.," said Petrey. "It is a tribute to our entire company and especially our research and development team, who continue to provide new, economic and sustainable solutions to customer problems."

For over 20 years, Ardleigh Minerals, Inc. has been a leader in sustainability solutions for industrial companies enabling many companies to reach their goal of zero landfill.

**For more information** on Ardleigh Minerals, Inc. or to send materials, call 216.464.2300, e-mail Erin Johnson at [ejohnson@ardleigh.net](mailto:ejohnson@ardleigh.net), or visit [www.ardleigh.net](http://www.ardleigh.net).



**About Ardleigh Minerals:** Since 1994, Ardleigh Minerals has been specializing in the recycling of materials generated in thermal spray preparation and processing, including cold, flame, HVOF, plasma and wire arc spraying. Ardleigh serves the aerospace, automotive, catalytic, electronic and thermal spray industries. The company provides maximum economic recovery to each facility and helps companies achieve their ISO 14001 requirements.

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*ITSA members invite your company to join us in this endeavor. See pages 12-15.*

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## Never Drop Your Prices Again! How to Stop Selling on Price

I was recently at Lord & Taylor with a close friend of mine when she held up two pairs of high-heeled shoes. Both pairs were black, appeared similar and looked pretty to me. "What do you think each pair of shoes costs?" she asked.

"Well, this is a nice place, so I'm guessing that they both cost about \$150," I replied.

She smiled at me as if she were watching a puppy hopelessly barking at the moon. "Actually this pair," she said, holding up the shoes in her left hand, "costs \$110."

"I was close!" I said defensively.

But then she continued. "Now this pair," she said, holding up the shoes in her right hand, "costs \$650."

"What?!?!? But they look so similar!" I exclaimed in surprise.

Upon further reflection, I began to see the parallels that women's shoes have with selling on price versus value: Products or services that are fundamentally the same can sell for drastically different prices. It all depends on the way they're sold.

Let me introduce you to two salespeople: Don and Liz. Both have been selling bathroom accessories for 20 years. However, they each sell in a completely different way.

Don is all about price. He'll walk into a prospect's office and say, "I see that you're working with Grohe, and I can show you how you can save 50% by working with me instead..."

Liz, on the other hand, is all about selling on value. She'll walk into a prospect's office and begin a conversation by saying, "I really appreciate your inviting me in today. I want to tell you up front that if you are looking for the lowest prices, I'm not your gal. My goal is to help my clients create a bathroom that 'wows' visitors. Does it make sense for us to continue talking?"

Both approaches lead to sales, but the difference in the average transaction size and profitability is night and day. Liz wins, and she wins big.

If you're determined to sell on price like Don, then you should stop reading this now. However, if you're open to selling on value like Liz, then stay with me...

Here are four ways to stop selling on price:

1. Stop being a vendor: Don is a vendor to his customers, while Liz is a strategic partner to her clients. Get away from just being another vendor offering the best price. Instead, focus on how you can help provide massive value to your clients. The prospects that just want the best price are not who you want to work with. At least 60% of prospects want something more than just the best price. Target those folks.

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2. Be distinct: Both of the shoes my friend showed me appeared to be similar, but one had a very distinct brand, while the other was essentially no-named. You don't need advertising to be distinct — your approach to selling can be what makes you stand out. While Don's approach was pretty cheesy and predictable, Liz was bold and totally distinct from what the prospect typically experiences. Immediately, the prospect is intrigued to understand more about why Liz isn't the cheapest. Everyone knows that they get what they pay for, so let them experience the best.
3. Create value in your conversation: Every qualified prospect has challenges that you can solve. For example, in the case of Liz, her qualified prospect might be a developer that has used cheap bathroom accessories in the past only to find that they frequently break and need to be replaced after only a year. By learning about the prospect's experience and how much that cost him in lost revenues, Liz is creating tremendous value for her products — before she ever even shows him her product line.
4. Pile it on: Good prospects are willing to pay more when they believe they are getting tremendous value. That means that, in order to create that value, you must think in terms of selling solutions and packages. For example, Liz not only sells bath-

room accessories, but she also offers custom design and assistance with actually installing the accessories in order to ensure that they last for many years. This perceived added value allows her to charge a higher price than Don could ever imagine charging. How can you add additional products or services to your offering to increase the perceived value of your product or service?

Selling on price is never the only option for a company. By following these four steps and thinking creatively about how to increase your value in the eyes of the client, your sale size will increase dramatically.

What will you do to increase your sale size?

**About the Author:** Marc Wayshak [<http://www.marccwayshak.com/>] is a sales strategist who created the Game Plan Selling System. He is the author of two books on sales and leadership including his latest book, *Game Plan Selling* [<http://amzn.to/15MdhA9>] and a regular online contributor to Entrepreneur Magazine and the Huffington Post Business section.

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*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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www.neplasma.com 860.928.6561  
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- Plasma Coatings** - Union Grove, WI  
www.plasmacoatings.com 262.878.2445  
Mr. Daniel Cahalane, info@plasmacoatings.com

- Plasma Technology, Inc.** - Torrance, CA  
www.ptise.com 310.320.3373  
Mr. Robert D. Dowell, salespti@ptise.com
- St. Louis Metallizing Company** - St. Louis, MO  
www.stlmetallizing.com 314.531.5253  
Mr. Michael Murphy, mjmurphy@stlmetallizing.com
- Sharkskin Coatings and Surface Technologies** - Canada  
www.sharkskincoatingsltd.com - 519.627.0060  
Mr. Ron Orange, ron@sharkcoatings.com
- Spraymetal, Inc.** - Houston, TX  
www.schumachercoinc.com 713.924.4200  
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- Superior Shot Peening, Inc.** - Houston, TX  
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Ms. Mollie Blasingame, mmb@superiorshotpeening.com
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## SUPPLIER MEMBER COMPANIES

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- Donaldson Torit** - Minneapolis, MN  
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Mr. Terry Wilmert, t.wilmert@fstincusa.com
- Fujimi Inc.** - Arlington Heights, IL  
www.fujimico.com 847.398.6544  
Mr. Michael Akiyoshi, makiyoshi@fujimico.com



**Genie Products, Inc.** - Rosman, NC

www.genieproducts.com 828.862.4772

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Mr. Paul Sedor, Paul.Sedor@globaltungsten.com

**Globe Metal, Inc.** - Sainte-Catherine, QC Canada

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Mr. Adam Rubin, adam@globemetal.com

**Green Belting Industries LTD** - Mississauga, ON, Canada

www.greenbelting.com 905.564.6712

Mr. Tim Connelly, tconnelly@greenbelting.com

**H.C. Starck North American Trading LLC** - Newton, MA

www.hcstarck.com 617.407.9960

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**HAI Advanced Material Specialists** - Placentia, CA

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**Haynes International** - Mountain Home, NC

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**Imperial Systems** - Jackson Center, PA

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**North American Höganäs** - Hollsopple, PA

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www.pmrecovery.com 860.536.5396

Mr. Paul Sartor, paul@pmrecovery.com

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**Praxair Surface Technologies** - Concord, NH

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**Progressive Surface** - Grand Rapids, MI

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**Saint-Gobain Ceramic Materials** - Worcester, MA

www.coatingsolutions.saint-gobain.com 508.795.2351

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**Oerlikon Metco (US) Inc.** - Westbury, NY

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**Thermach, Inc.** - Appleton, WI

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Stony Brook, NY

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**SUPPORTING MEMBER SOCIETIES****DVS, The German Welding 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.



**Chairman Mosier**

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 [www.thermalspray.org](http://www.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.*

### Officers

Chairman: **Bill Mosier**, Polymet Corporation  
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**Richard Grey**, Genie Products, Inc.  
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**Dan Hayden**, Hayden Corporation  
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### ITSA Scholarship Opportunities

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

### ITSA Thermal Spray Historical Collection

In April 2000, the International Thermal Spray Association announced the establishment of a Thermal Spray Historical Collection which is now on display at the State University of New York at Stony Brook in the Thermal Spray Research Center, USA.

Growing in size and value, there are now over 30 different spray guns and miscellaneous equipment, a variety of spray gun manuals, hundreds of photographs, and several historic thermal spray publications and reference books.

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

### ITSA SPRAYTIME Newsletter

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

### Become a Member of The International Thermal Spray Association

Your company should join the International Thermal Spray Association (ITSA) now! As a company-member, professional industrial association, our mission is dedicated to expanding the use of thermal spray technologies for the benefit of industry and society. ITSA members invite and welcome your company to join us in this endeavor.

**New - All ITSA company members are now also Supporting Members of the American Welding Society.**

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

Our annual membership meetings provide a mutually rewarding experience for all attendees - both business and personal. Our one-day technical program and half-day business meeting balanced by social activities provide numerous opportunities to discuss the needs and practices of thermal spray equipment and processes with one another.

As an ITSA member, your company has excellent marketing exposure by being listed centerfold in the **SPRAYTIME** newsletter.

ITSA member companies are also highlighted in the ITSA booth at several trade shows throughout the year.

For more information, contact Kathy Dusa 440.357.5400 or visit the membership section at [www.thermalspray.org](http://www.thermalspray.org).





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## Siemens H-Class Gas Turbine Attains 100,000 EOH Over the Entire Fleet

The fleet of Siemens H-class world-record gas turbines achieved a cumulative 100,000 equivalent operating hours at the end of September 2014. Forty of the H-class gas turbines have been sold worldwide to date. Eleven of these machines are currently in successful commercial operation with a high degree of starting reliability and availability. This makes them the most successful H-class gas turbine on the world market.

Recently high efficiency levels of more than 60 percent were demonstrated in commercial operation in the combined cycle power plants (CCPP) in South Korea, Dangjin 3 and Andong. A net efficiency of 60.75 percent had already been demonstrated at the Irsching plant in Germany back in 2011. The 50 Hertz machine SGT5-8000H is marketed with a capacity of 400 MW in pure gas turbine operation and 600 MW in CCPP single shaft operation. The SGT6-8000H is marketed with 286 MW and 430 MW in CCPP single shaft arrangement.



The picture shows the Siemens gas turbine SGT5-8000H during assembly in the Siemens gas turbine manufacturing facility in Berlin, Germany.

The SGT-8000H series builds upon the tried-and-tested Siemens F and G-class turbine series, which has logged more than 25.9 million cumulative operating hours. The success of this gas turbine series is based on years of development work with intense R&D effort, on meticulous testing of the individual components and systems and on long-term and thorough validation of the model. This series was not only tested in the test bed in Berlin, but also under actual power plant conditions, i.e., in full-load operation feeding the generated power to the grid. Testing was initially conducted in pure gas turbine operation and ultimately successfully completed in combined cycle operation.

These air-cooled machines not only enable efficiency levels to be achieved which were out of reach until now, but also offer the greatest possible operating flexibility, with short startup times and fast load-changing capabilities. They also stand out thanks to their low

emissions in base and part-load operation.

Efficiency levels of more than 61 percent can even be achieved through further development of the overall drive train and optimization of the water/steam cycle, along with improvement and development of the other power plant components toward a fully integrated overall solution. In the process, operating flexibility can be enhanced further by optimal interaction between the individual power plant components in an SGT-8000H power plant solution.

This turbine operates at 1,500 degrees Celsius in the combustion chamber that causes steel to glow bright red. To enable the blades to keep working efficiently for many years, without additional service needed (compared to other gas turbines) this turbine is equipped with blades that are no longer made of steel but of a nickel-based alloy, which offers much greater heat resistance. In addition a labyrinth of tiny channels runs through the interior of the cast blades, allowing cold air to be blown through them to carry away some of the heat. This cooling system is complemented by lines of tiny holes drilled into the outer surface of the turbine blades. And last but not least these high-tech blades are also enveloped in a microscopically thin ceramic coating. This ceramic material is so finely distributed over the structure of the blades that it does not compromise their extreme heat resistance. The coating material was specially designed to avoid the traditional drawback of ceramics, namely their brittleness. This coating process is atmospheric plasma spray (APS).

**For further information on Division Power and Gas**, visit [www.siemens.com/about/en/businesses/power-and-gas.htm](http://www.siemens.com/about/en/businesses/power-and-gas.htm).

**For further information on SGT-8000H**, visit [www.energy.siemens.com/hq/en/fossil-power-generation/gas-turbines/](http://www.energy.siemens.com/hq/en/fossil-power-generation/gas-turbines/).

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 165 years. The company is active in more than 200 countries, focusing on the areas of electrification, automation and digitalization. One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is No. 1 in offshore wind turbine construction, a leading supplier of combined cycle turbines for power generation, a leading provider of power transmission solutions and a pioneer in infrastructure solutions and automation and software solutions for industry. The company is also a leading supplier of medical imaging equipment – such as computed tomography and magnetic resonance imaging systems – and a leader in laboratory diagnostics as well as clinical IT. At the end of September 2013, Siemens had around 362,000 employees worldwide on the basis of continuing operations. **For further information**, visit [www.siemens.com](http://www.siemens.com).



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- COATINGS AND PROCESSES FOR BIOMEDICAL AND ENVIRONMENTAL APPLICATIONS

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**APRIL 28-29** EQUIPMENT EXHIBIT Dedicated to Vacuum Coating Technologies

**APRIL 26-30** INTERACTIVE NETWORKING Forums and Discussion Groups

### Spotlight Sessions

Technical Poster Presentations: with 3-Minute Oral Presentations  
Heuréka! Post-Deadline Recent Developments: Featuring Late-Breaking Technology  
Business Topics: Beyond Vacuum Coating... New Ideas Making Your Business Better  
Vendor Innovators Showcase: 10-Minute Vendor Presentations during the Exhibit

**Abstracts Accepted for Spotlight Sessions until March 1, 2015**

**Register online at [www.svc.org](http://www.svc.org)**

FOR MORE INFORMATION:

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## CALENDAR OF EVENTS 2015

### JANUARY 2015

**10-13 Dubai UAE** *Arabia Essen Welding and Cutting co-located with 5th Int'l Trade Fair for Tube and Pipe Industries, 2nd Int'l Trade Fair for Joining, Cutting, Surfacing* - visit [www.arabia-essen-welding-cutting.com](http://www.arabia-essen-welding-cutting.com)

### FEBRUARY 2015

**9-10 Materials Park, OH USA** *Introduction to Thermal Spray course* visit [www.asminternational.org](http://www.asminternational.org)

**TBD Doha, Qatar** *Middle East TurboMachinery Symposium* **METS 2015** - visit [middleeastturbo.tamu.edu](http://middleeastturbo.tamu.edu)

### MARCH 2015

**4-5 Lake Buena Vista Orlando, FL USA** *LAM 2015 Laser Additive Mfg Workshop* - visit [www.lia.org](http://www.lia.org)

**15-19 Dallas, TX USA** *Corrosion 2015* - visit [www.nacecorrosion.org](http://www.nacecorrosion.org)

### APRIL 2015

**9-11 New Orleans, LA USA** *International Thermal Spray Association Annual Membership Meeting* - contact [itsa@thermalspray.org](mailto:itsa@thermalspray.org) for information

**25-30 Santa Clara, CA USA** *58th SVC Annual Technical Conference* - visit [www.svc.org](http://www.svc.org)

**26-29 Helsingør, Denmark** *JOM-18 18th Int'l Conference on Joining Materials* - contact [jom\\_aws@post10.tele.dk](mailto:jom_aws@post10.tele.dk)

### MAY 2015

**11-14 Long Beach, CA USA** *ITSC2015 Int'l Thermal Spray Conference co-located with Aeromat 2015 and Microstructural Characterization of Aerospace Materials and Coatings Conferences and Expositions* - [www.asminternational.org/web/itsc-2015](http://www.asminternational.org/web/itsc-2015)

### JUNE 2015

**1-4 Shanghai, China** *Beijing Essen Welding and Cutting* - visit [www.beijing-essen-welding-cutting.com](http://www.beijing-essen-welding-cutting.com)

**15-19 Montreal, Canada** *Turbo Expo 2015* - visit [www.asmeconferences.org/TE2015](http://www.asmeconferences.org/TE2015)

### SEPTEMBER 2015

**14-17 Houston, TX USA** *44th TurboMachinery and 31st Pump Symposium* - visit [www.pumpturbo.tamu.edu](http://www.pumpturbo.tamu.edu)

**SEP 29- OCT 1 Mississauga, Ontario Canada** *CMTS Canadian Manufacturing Technology Show* - visit [www.cmts.ca](http://www.cmts.ca)

### OCTOBER 2015

**20-23 São Paulo, Brazil** *Brazil Welding Show* - visit [www.brazil-welding-show.com](http://www.brazil-welding-show.com)

### NOVEMBER 2015

**9-12 Chicago, IL USA** *Fabtech* - visit [www.fabtechexpo.com](http://www.fabtechexpo.com)

## 2016

### MAY 2016

**May St. Petersburg, Russia** *Essen Welding Pavilion at SVARKA* - visit [www.svarka.de](http://www.svarka.de)

**Is Your Event Listed? Send notice to [spraytime@thermalspray.org](mailto:spraytime@thermalspray.org)**

### Join the ASM Thermal Spray Society Online Community Forum

ASM TSS members welcome visitors to register and access the new **searchable** forum, as well as explore the new online community. **To subscribe**, visit <http://tss.asminternational.org>, choose networking and forum for instructions.

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

### Free DIN Standards Poster

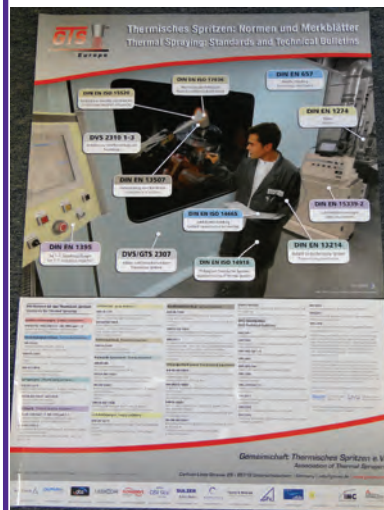
GTS – the Association of Thermal Sprayers – has produced this spectacular new poster of **“Thermal Spraying: Standards and Technical Bulletins”**.

The poster identifies DIN Standards for Thermal Spraying and the DVS Technical Bulletins. The standards/bulletin names are in German and in English.

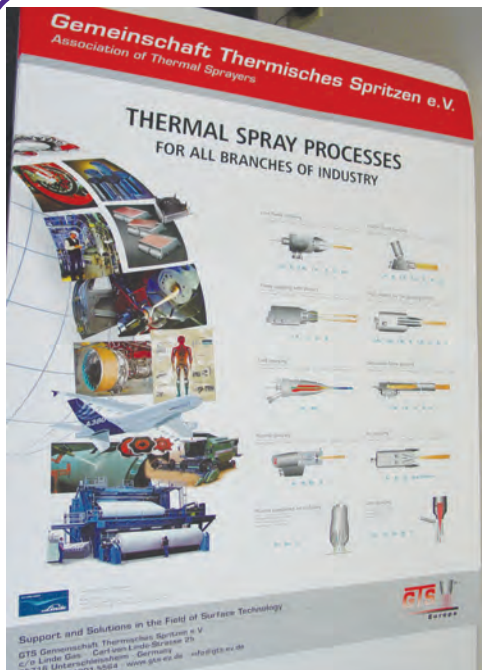
The poster provides contact information for obtaining the complete version Standards and Bulletins.

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

Send request for poster to [itsa@thermalspray.org](mailto:itsa@thermalspray.org).







### Free Poster

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



**Free NEW Poster** from Flame Spray Technologies illustrating various spray guns and including typical coatings and application data. Suitable for framing. Send request for poster to [itsa@thermalspray.org](mailto:itsa@thermalspray.org).

### Journal of Thermal Spray Technology®

A publication of the **ASM Thermal Spray Society**  
**Mechanical Property of HVOF Inconel 718 Coating for Aeronautic Repair**

**Christophe Lyphout, Angelica Fasth, and Per Nylen**

The module of elasticity is one of the most important mechanical properties defining the strength of a material which is a prerequisite to design a component from its early stage of conception to its field of application. When a material is to be thermally sprayed, mechanical properties of the deposited layers differ from the bulk material, mainly due to the anisotropy of the highly textured coating microstructure. The mechanical response of the deposited layers significantly influences the overall performance of the coated components. It is, therefore, of importance to evaluate the effective module of elasticity of the coating. Conventional experimental methods such as microindentation, nanoindentation and four-point bending tests have been investigated and their results vary significantly, mainly due to inhomogeneous characteristics of the coating microstructure. Synchrotron radiation coupled with a tensile test rig has been proposed as an alternative method to determine the coating anisotropic elastic behavior dependence on crystallographic orientations. The investigation was performed on Inconel 718 (IN718) HVOF coating sprayed on IN 718 substrates. Combining these experimental techniques yield a deeper understanding of the nature of the HVOF coating Young's modulus and thus a tool for Design Practice for repair applications.

**Read the entire article in the February 2014 Issue**

Visit [www.asminternational/tss](http://www.asminternational/tss)

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Kendall Hollis, Seiji Kuroda, Chang-Jiu Li, and Armelle Vardelle

### Become a Member of the International Thermal Spray Association

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

**ITSA members invite your company to join us in this endeavor. See pages 12-15.**

## Metallisation Launches New ARC150 System

Metallisation has launched its new ARC150/S500-CL arcspray system, which has been specifically designed for higher throughput with up to 500 amp capacity.



There are many benefits of the new ARC150 system. It retains the long supplies pack options and flexibility, offered by the current ARC140 system, and has an increased throughput of around 40 per cent compared to traditional Metallisation 350 amp systems. The spray gun, energizer, drive system and supplies pack have all been redesigned in order to support the increased capacity.

The ARC150 spray gun has improved airflow, which delivers a finer coating and optimized reliability at the higher spraying current. The spray gun has easily changeable V-rollers for positive wire feed and increased capacity of its contact tubes, all designed to suit the increased current, while maintaining the proven, low maintenance design of its arcspray guns. The contact tube arrangement is also a new design, which utilises tubes with larger contact areas and replaceable contact tips. The tips are made from a specialist, hard wearing material, which aids the dissipation of heat build-up. It takes less than five minutes to change the contact tubes and air concentrator, which do not require adjustment once installed, saving further operator time.

The new S500-CL energizer features sealed electronics for reliable operation in the harshest of spray environments. All new digital gauges offer both scale and numeric displays with high contrast, which are easily visible in light or dark conditions or through shaded visors. The new energizer benefits from closed loop current control, enabling the operator to set the spray current before spraying commences. It also protects the system from spraying at currents higher than 500 amp. Metallisation specifically chose 500 amp, as opposed to 700 amp, as a manageable production rate to provide a balance between high throughput, system weight and high quality coatings.

The energizer is PLC controlled by an industrial PLC unit, dramatically reducing the electrical components and increasing reliability.

There is a growing industry requirement for high temperature alloys to be thermal sprayed, such as Inconel 625 or Hastelloy C276, which can be applied using the ARC150 system. To enable applicators to use the ARC150 for these applications, a conversion kit is available from Metallisation.

Stuart Milton, Sales Director, Metallisation says: "We are really proud of the new ARC150. All of our arcspray systems have a proven track record and continually deliver excellent anti-corrosion and engineering coatings, however, we are always keen to develop and enhance our equipment and processes to benefit our customers. The ARC150 energizer has been produced under our new lean manufacturing process. This is helping us to respond to our customers with shorter lead times, deliver standardization of our products and enhance the excellent customer service we provide."

**For more information** on the new ARC150, please contact Stuart Milton, Sales Director, on +44 (0) 1384 252 464 or visit [www.metallisation.com](http://www.metallisation.com)

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### Become a Member of the International Thermal Spray Association

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

**ITSA members invite your company to join us in this endeavor. See pages 12-15.**



# CORROSION 2015

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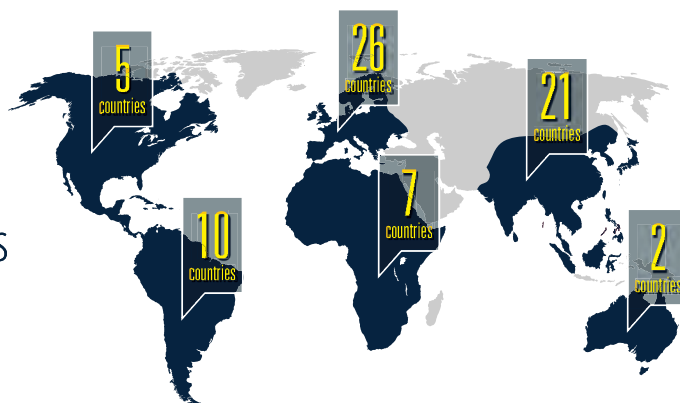
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## Oerlikon Awarded Long-Term Agreement in Excess of \$90,000,000

Oerlikon's Surface Solutions Segment has been awarded a ten-year long-term agreement by Snecma worth more than \$90,000,000. The agreement is for the supply of LEAP (Leading Edge Aviation Propulsion) engine components. This marks a significant milestone in the partnership between Snecma and Oerlikon Metco which has been built over the years.

Snecma, part of the international high-technology Safran group, has awarded Oerlikon Metco's unit Eldim the manufacture of low-pressure turbine components. Developed under the LEAP program, the engine is a new-generation high-bypass turbofan with a primary application to power the next generation of single-aisle commercial aircraft. The LEAP engine has been designed and developed by CFM International – a 50/50 joint venture between Snecma and General Electric. The new LEAP engine incorporates a number of innovative yet proven technologies that meet the challenges faced by aircraft manufacturers and airlines alike. As a result, LEAP engines are the new-generation aviation turbine power plant of choice that provides operators with significant reductions in fuel consumption, noise and emissions.

### Three LEAP versions

The LEAP-1A was chosen by Airbus as one of the engines offered on Airbus' new A320neo aircraft. The new aircraft/power plant combination should enter commercial service in 2016 after engine certification in 2015. The LEAP-1B was selected by Boeing as the exclusive power plant for the 737 MAX. Engine certification is planned in 2016, with entry into service in 2017. The LEAP-1C was selected by Comac of China to power the new C919 single-aisle jetliner. Engine certification is scheduled for 2015.

### Oerlikon Metco to empower Snecma's ambition

Snecma awarded Oerlikon Metco with the manufacturing of low-pressure turbine components due to the competitive bid from a European manufacturing source, combined with Metco's experience in qualifying parts and ramping up high volume production on an tight schedule. Metco will empower Snecma to bring the LEAP program to the market on time.

"Our customers associate Oerlikon Metco with outstanding experience and reliable delivery of performance-critical products and solutions even in large order volumes. We are



Dr. Roland Herb

pleased that our long-standing customer Snecma chose Oerlikon Surface Solutions as their strong partner for this highly specialized development program," says Dr. Roland Herb, CEO Oerlikon Surface Solutions.

### About Oerlikon Metco

Oerlikon Metco enhances surfaces that bring benefits to customers through a uniquely broad range of surface technologies, equipment, materials, services, specialized machining services and components. The surface technologies such as thermal spray, thin film, plasma heat treatment and laser cladding improve the performance and increase efficiency and reliability. Oerlikon Metco serves industries such as aviation, power generation, automotive, oil & gas, industrial and other specialized markets and operates a dynamically growing network of more than 50 sites in EMEA, Americas and Asia Pacific. Oerlikon Metco, together with Oerlikon Balzers, belongs to the Surface Solutions Segment of the Switzerland-based Oerlikon Group (SIX: OERL).

### About the Surface Solutions Segment



The Oerlikon Surface Solutions Segment includes the two brands Oerlikon Balzers and Oerlikon Metco. Oerlikon Balzers is one of the world's leading suppliers



Future LEAP jet engines will benefit from improved fuel efficiency.

of surface technologies that significantly improve the performance and durability of precision components as well as tools for the metal and plastics processing industries. Extremely thin and exceptionally hard coatings reduce friction and wear. Under the technology brand ePD, the company develops integrated services

and solutions for the metallization of plastic parts with chrome effects. Oerlikon Metco enhances surfaces with coating solutions and equipment. Customers benefit from a uniquely broad range of surface technologies, coating solutions, equipment, materials, services, and specialized machining services and components. The innovative solutions improve performance and increase efficiency and reliability. Oerlikon Metco serves industries such as power generation, aviation, automotive, and other specialized markets. The Surface Solutions Segment operates a dynamically growing network of currently more than 130 facilities with over 110 coating centers in 35 countries in Europe, the Americas and Asia, employing around 6,000 people. The Surface Solutions Segment is part of the Switzerland-based Oerlikon Group (SIX: OERL).

**For more information**, visit [www.oerlikon.com](http://www.oerlikon.com)





## Saint-Gobain Acquires U.S.-Based Phoenix Coating Resources Inc.

Saint-Gobain has finalized the acquisition of Phoenix Coating Resources Inc., a company based in Mulberry, FL that manufactures ceramic ingots used to produce high-resistance thermal coatings on metal parts for the aeronautics industry. The aim is to improve the energy efficiency of aircraft engines by enabling them to operate at higher temperatures.

Phoenix Coating Resources Inc. will join Saint-Gobain's Ceramic Materials business. The acquisition will enable Saint-Gobain to expand the range of coating solutions it provides to the aeronautics industry, in alignment with the Group's strategy of strengthening its position in high-performance solutions for growing markets.

### About Saint-Gobain

Saint-Gobain, the world leader in the habitat and construction markets, designs, manufactures and distributes building and high-performance materials, providing innovative solutions to the challenges of growth, energy efficiency and environmental protection. With 2013 sales of €42 billion, Saint-Gobain operates in 64 countries and has nearly 190,000 employees.

**For more information** about Saint-Gobain, visit [www.saint-gobain.com](http://www.saint-gobain.com).

With almost 6,400 employees, Saint-Gobain's Ceramic Materials business has a powerful manufacturing base that includes 65 plants in 18 countries. It manufactures a wide range of high value-added components for industrial markets, including grains and powders, ceramic components, refractories, specialty crystals and associated systems.

**For more information**, please visit website [www.ceramicmaterials.saint-gobain.com/](http://www.ceramicmaterials.saint-gobain.com/).

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## DeWAL Industries announces Keith Gainey, Western Regional Sales Manager

DeWAL Industries has increased sales coverage for the western half of the U.S.

**Keith Gainey** has joined DeWAL's Sales Team as the Sales Manager for the United States, west of the Mississippi River. With over 35 years of sales and sales management experience in industrial and aerospace applications, and the last 6 years focusing on specification qualifications with aerospace OEM's for high performance products Keith is a natural addition.



Keith brings with him an extensive problem solving background in thermal spray masking, fluoropolymer film, composite lay-up, and coated fabric applications. DeWAL looks forward to the addition of Keith's talents and is now represented throughout the contiguous United States.

Since its founding in 1974, DeWAL has become an industry leader in the manufacture of pressure sensitive tapes from PTFE, UHMW-PE, Polyimide, and PTFE coated glass fabric. The company also manufactures skived PTFE and UHMW-PE film, friction-reducing Dynaglide® PTFE-based compounds, and PORO-TEX® and UNI-PORE® specialty products.

**For more information** and Keith's contact information, call or email DeWAL Industries, Inc., 15 Ray Trainor Drive, Narragansett, RI 02882, 800-366-8356, [usa1@dewal.com](mailto:usa1@dewal.com)

### Join the ASM Thermal Spray Society Online Community Forum

ASM TSS members welcome visitors to register and access the new **searchable** forum, as well as explore the new online community.

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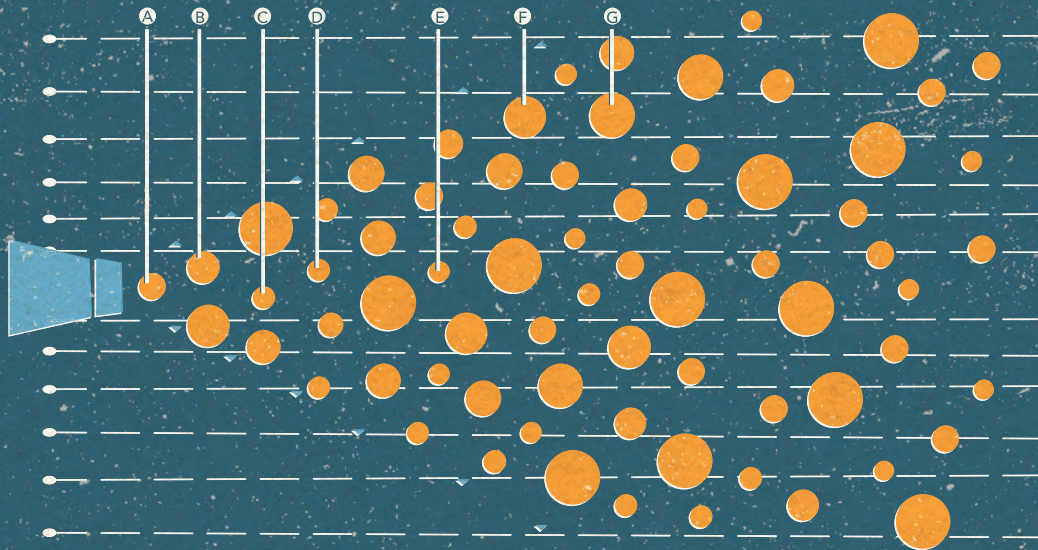
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