

DAY 2

TUESDAY
NOVEMBER 12, 2019

THE OFFICIAL FABTECH PUBLICATION

FABTECH

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



SHOW DAILY

TODAY'S EVENTS

Keynote: Frank Abagnale, Cybersecurity Expert, Best-selling Author and Subject of "Catch Me If You Can"

8:30 AM – 10:00 AM
Lakeside Center Ballroom

Frank Abagnale Meet/Greet

10:00 AM – 11:00 AM
SME Booth D46713

Leadership Exchange: State of the Industry – Automation in Manufacturing

12:30 PM – 1:30 PM
Lakeside Center Ballroom

AWS Welding Competition

9:00 AM – 4:00 PM
Booth B17116

Smart Manufacturing Hub

Sessions All Day
During Show Hours
Booth A4138

Rest and Recharge Lounge

During Show Hours
North Building 2.0 Level
(by McDonald's)

FABTECH Industry Night

5:30 PM – 7:30 PM
Lakeside Center Ballroom

FABTECH Announces Change to Chicago Event Dates

The five FABTECH event partners announced today that beginning in 2021, FABTECH Chicago – previously held in November – will shift its dates to September. The event, hosted in odd years at Chicago's McCormick Place, will make its next visit to the Windy City on September 13-16, 2021 and remain in September in future odd-numbered years.

FABTECH is one of the largest events held at McCormick Place, bringing \$73 million delegation spending to Chicago. As a result

this shift to support the needs of the industry.

Future Chicago dates will be as follows:

September 13-16, 2021

September 11-14, 2023

September 8-11, 2025

Why the date change?

Due to FABTECH's industry-leading status, we've earned our way into this coveted September period in Chicago. These prime

and significance. In 2019, FABTECH will occupy nearly 2 million square feet of McCormick Place space. ■

Save the dates for future FABTECH Events.

2020

Mexico City, Mexico | May 12-14
Toronto, Ontario Canada | June 16-18
Las Vegas, Nevada | November 18-20

2021

Monterrey, Mexico | May 4-6
Chicago, Illinois | September 13-16

2022

Mexico City, Mexico | May 4-6
Toronto, Ontario Canada | June 14-16
Atlanta, Georgia | November 8-10

2023

Monterrey, Mexico | May TBD
Chicago, Illinois | September 11-14



of FABTECH's growth over the past years and our favorable relationship with the city and the convention center, we are proud to make

dates are only made available to a few select events that have continuously demonstrated the ability to grow the events scope, size



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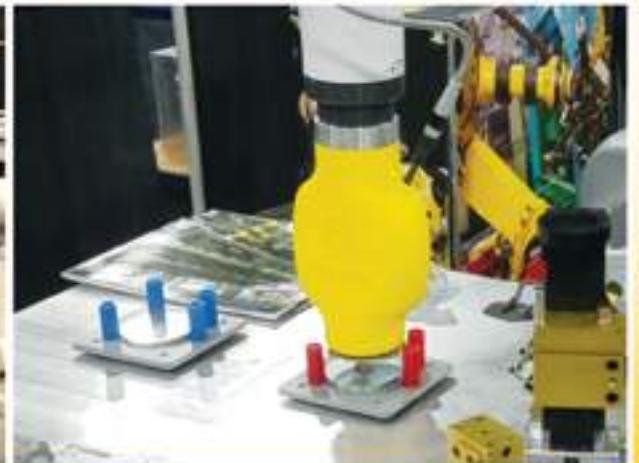


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Enter the Bystronic World of Innovation – the Future of High-Performance Manufacturing

At Booth A2122, Bystronic will present new high-performance solutions that cover the full spectrum of file-to-part manufacturing: laser cutting, bending, automation, and software technologies that are driving fabricators to new levels of productivity, profitability and success.

The innovative ByStar Fiber with NEW 12kW fiber laser, has an expanded spectrum of cutting applications for exceptional speed and cutting quality from thin sheet to thick plate edge. High machine dynamics and process reliability ensure uncompromising high-end performance and unparalleled high parts output. The ByStar Fiber 3015, 12kW will be shown with the NEW BySort, an enhanced solution optionally available on the NEW ByTrans Cross modular material handling system that fully automates the sorting of parts.

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ByStar Fiber 12kW with ByTrans Cross and BySort

who want to gain a competitive edge with innovative technology and performance at an affordable price. With automated material handling, the BySmart Fiber yields greater profits. The BySmart Fiber 3015 with 6kW Fiber laser will be shown with the ByTrans Extended compact material handling system.

continued on p. 10

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Veterans Wow FABTECH With Inspirational Stories

Among the major highlights from Monday's FABTECH was the FABx Tech Talks Keynote. In honor of Veterans Day, this year's FABx featured a powerful lineup of visionary veterans. These heroes shared incredible stories from their many years of service and the lessons they learned along the way that helped them excel in leadership, business,

advanced manufacturing, and workforce development. Drawing on their unique experiences, each speaker captivated and inspired the audience with frontline stories focused on motivation, team building, innovation, and how to achieve excellence in the business battlefield.

Chad Hennings kicked things off with a powerful keynote address. He's a 9-year NFL career veteran with three Super Bowl Championship rings and one of the most decorated college footballers in NCAA history. He also completed 45 successful combat missions with the Air Force. During his talk, he detailed the philosophy he

lives by – excellence is not a destination, but an identity.

"Identity is the filter through which all of our life's experience pass," said Hennings. "Character and virtue are the process through which we live, and living excellence is the journey."

He shared an anecdote about Viktor Frankl, author of "Man's Search for Meaning." As a survivor of Auschwitz and a medical doctor, Frankl made observations as to why many people lived while others died even though they existed in comparable conditions.

"It boiled down to the point that those who lived had a purpose or a meaning to live for – something that went beyond themselves or their personal gain," said Hennings.

In his own career, he experienced phenomenal success at an early age: three NFL rings in four years.

These days, he is all about figuring out strategically where you want to be in your life, and how to get there fast. Focus on achieving those goals, he said. As you head towards them, you must understand that life will happen – for better or worse. Illness, accidents, economic downturns, and other challenges will get in the way. However, it is vital not to abandon or lose sight of the fact that you are heading toward your desired goal.

Another tenet covered in his talk was that life is a series of choices, and to choose wisely. "The tactical decisions you make as an individual or a company will bear fruit, or they won't, depending on whether or not you are living a life of excellence," said Hennings.

He laid out the steps to living a life of excellence, how they apply to each of us as individuals and as members of a team or organization. He demonstrated how leadership is the glue that pulls it all together.

Manufacturing Veterans

Hennings was followed by a series of veterans now leading the way in industry and manufacturing. These FABx Tech Talk speakers included Hernán Luis y Prado, Founder and CEO of Workshops for Warriors (WFW). His organization provides quality training, accredited educational programs in Science, Technology, Engineering and Math (STEM), and opportunities to earn third-party nationally recognized credentials. These programs enable veterans, transitioning service members, and other students to be successfully trained and placed in their chosen advanced

continued on p. 22

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Discover Laser-cutting and Automation Technology with Mazak Optonics at FABTECH

Whether you're a job shop owner or you manage facilities around the world, Mazak Optonics has the laser-cutting machinery, automation solutions, and IIoT tools you need to succeed. Mazak Optonics Corporation will be showing three laser-cutting machines and an



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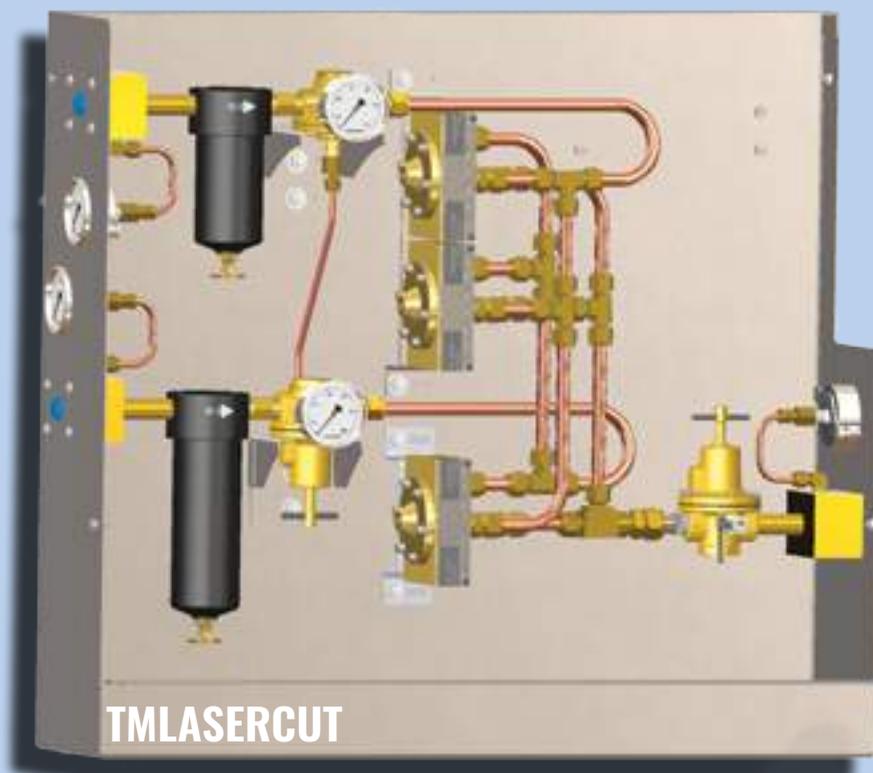
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automation solution at FABTECH Chicago in Booth A4202. Mazak Optonics is showing the OPTIPLEX 3015 FIBER III 10kW and the OPTIPLEX 3015 DDL 6kW with a fully automated part sorting solution.

The OPTIPLEX FIBER III 10kW offers increased cut speeds for greater throughput. This machine utilizes the PreviewG Control and higher performance digital drive package designed for premium performance. This new drive system provides higher productivity through high-speed and high-accuracy. The new cutting-edge PreviewG Control offers state of the art CPU for unsurpassed operations speed, high-response and high-speed machine motion. The OPTIPLEX FIBER III 10kW can utilize high-pressure shop air cutting to reduce the cost-per-part.

Mazak's fully automated part sorting solution for laser processed parts will also be on display in Booth A4202. From pallet change to sorting finished parts, this automation solution improves material flow through the fabrication production line resulting in increased productivity. This automation solution has a modular design that allows for expanding with the growth of your operations and is flexible enough to allow for customized unloading positions. A wide range of functions and enhancements to expand the range of applications include integration of unloading conveyors, over/under carts, mini unload tower, labelers, etc.

Discover more about Mazak's laser-cutting and automation lineup in Booth A4202 at FABTECH. ■



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Enter the Bystronic World of Innovation — the Future of High-Performance Manufacturing

continued from p. 4

Bystronic's NEW tube laser cutting solutions offer the widest range of automated 2D and 3D cutting systems for the flexible production of small and large series tubes and profiles. The availability of 2D and

3D laser cutting technology opens up the possibility of individually customized and precise cutting of a wide variety of shapes-- also profiles with diverse cross-sections and bevel cuts of up to 45 degrees. Flexible

loading from bundle loading or from chain loading system for open profiles ensures high precision processing. The Model FL-170 tube laser cutting system will be presented.

Based on the popular Xpert press brake, the NEW Xpert Pro press brake offers a modular design that increases the flexibility of add-on options for unmatched speed and productivity. With the Xpert Pro, Bystronic presents a high-end press brake that sheet metal processing companies can adapt to their requirements on a modular basis. Demonstrated will be the Xpert Pro 150 Dynamic Edition.

The NEW Xpress 50 press brake is a compact, affordable bending solution with intuitive operation, employing Bystronic's proven ByVision Bending Control technology.

Compact, modular machine design and additional functions support individual customization to the production environment. High machine rigidity offers ample space for a wide range of bending applications.

The Xpert 40 with Mobile Bending Robot supports today's fluctuating lot sizes and varying part complexities in a fully flexible automated or manual bending system. Control is seamlessly integrated into the press brake user interface.

BySoft 7 software represents a new generation of design and manufacturing software that keeps pace with high productivity downstream equipment. BySoft 7 offers a comprehensive range of programming. The Plant Manager schedules and monitors manufacturing processes efficiently, providing an overview of the production process.

Developed by Bystronic, the ByCockpit App provides real-time analysis and visualization of the data associated with sheet metal processing to enable companies to constantly improve their production.

Visit Bystronic in Booth A2122. ■



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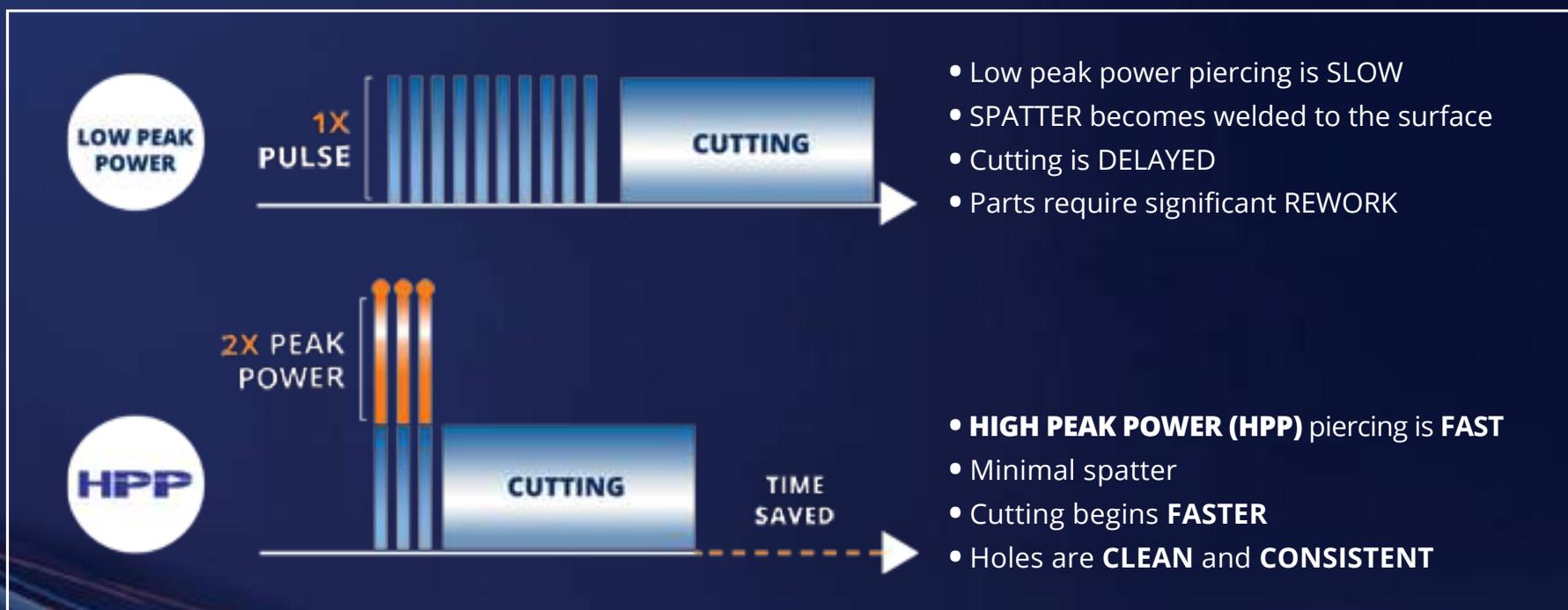
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BLM GROUP USA Highlighting 2D to 5D Laser Cutting Equipment at FABTECH 2019

At FABTECH 2019 in booth A2153, BLM GROUP USA is demonstrating its LT-FREE 5-axis laser cutter for 3D tubes and complex shapes, as well as its LS5 sheet metal cutting

system with an 8 kW laser, illustrating the breadth of BLM's laser cutting equipment.

The LT-FREE has the ability to cut 3D formed or shaped parts such as bent tubes, hydroformed

tubes, welded assemblies, and stamped or flat sheets. This means that operations such as cutting, drilling, punching, and milling, which are typically carried out in sequence on

various machines, can now all be performed on a single machine. This eliminates set-up time, reduces material handling, eliminates work in progress inventory, and downsizes space needed for storage.

The LT-FREE is available with powers up to 5 kW, table dimensions of 59 in. x 39 in. and axis stroke to x= 116 in., y= 37 in. and z= 29 in., and can machine mild steel, copper, aluminum, brass, stainless steel and galvanized steel. Four different configurations based upon throughput and part size.

The LS5 is the only modular, sheet laser cutting machine that can be expanded to accommodate tube cutting functions at a future time. A very compact machine with a configurable design, the LS5 accommodates a transverse or in-line pallet changer. Users can add automatic sheet loading and unloading or a storage tower for automated material type and thickness changeovers, which is the feature that will be demonstrated at FABTECH. Additionally, the quick nozzle changer feature for minimizing setup time when changing materials will also be shown.

The LS5 is available in powers up to 8 kW and comes in bed sizes of 10' x 5', 13' x 6.5', and 20' x 6.5'. The fiber laser makes it appropriate for cutting reflective materials such as copper, brass, and aluminum as well as mild, stainless and galvanized steels.

BLM GROUP is also featuring additional laser cutting and bending equipment in Booth D46532. ■

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Emerging Manufacturing Technologies Showcased

Advanced manufacturing is transforming the economy. Cutting-edge technology is being introduced into manufacturing processes to accelerate innovation. Yesterday's advanced manufacturing panel at FABTECH showcased how various organizations are taking advantage of tools such as analytics, digitization, big data, cybersecurity and the latest software to remain competitive and add value to their organizations.

MxD, for example, operates a nearly 100,000-square-foot innovation center near downtown Chicago. Its factory floor features some of the most advanced manufacturing equipment in the world, which partners can use for experimentation and training on everything from augmented reality (AR) to advanced simulation techniques. In partnership with the U.S. Department of Defense, it is equipping factories with the digital tools and expertise to improve productivity, quality, traceability, and compliance. The company has helped more than 300 companies win more business. "MxD is where innovative manufacturers go to forge their futures," said Chandra Brown, CEO of MxD. "Our mission is to enable U.S. manufacturers to make every single part better than the last. But this is a goal far too big for any one company to solve on its own."

Achieving this vision requires production collaboration between many entities – both private and government. The overall concept is for assembly and production lines to be embedded with software and sensors that are hooked up to the cloud. With the right infrastructure in place, manufacturers and fabricators are armed with the ability to send and receive data to analyze and fine tune operations. This enables equipment to improve itself and learn from every part produced in real-time.

"With more data and the ability to efficiently analyze and access it remotely, manufacturers can make better-informed business decisions," said Brown. "To remain competitive globally, manufacturing companies of all sizes need to invest in digital technologies wherever they can make the most impact, whether it is reducing waste and scrap in machining by automatically making adjustments to account for tool wear or tracking supply chain movement and inventory in real time to better predict and prepare for disruptions."

She emphasized that manufacturing in the USA remains an economic powerhouse. But as these new digital components become more common, they are moving the sector into what is known as the Fourth Industrial Revolution. Brown discussed research her company had

conducted to identify and classify emerging jobs and outline the skills and training that workers and employers should invest in to make the digital transition more seamless.

"Preparing and re-training the workforce will be essential to slow the widening skills gap in the manufacturing field," she said.

But there is a downside to the headlong rush toward a digitized future. As more manufacturing equipment and systems are connected to the internet, the risk for cyberattacks increases. More than 85% of the cybersecurity threats facing the manufacturing sector are targeted rather than opportunistic. This

is a far higher percentage than in other industries. It means that cyberattacks facing manufacturers are often highly coordinated and go after certain manufacturers with a specific purpose in mind.

continued on p.27



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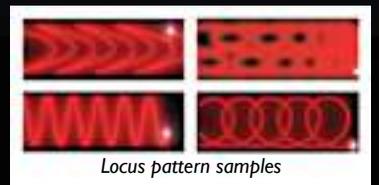
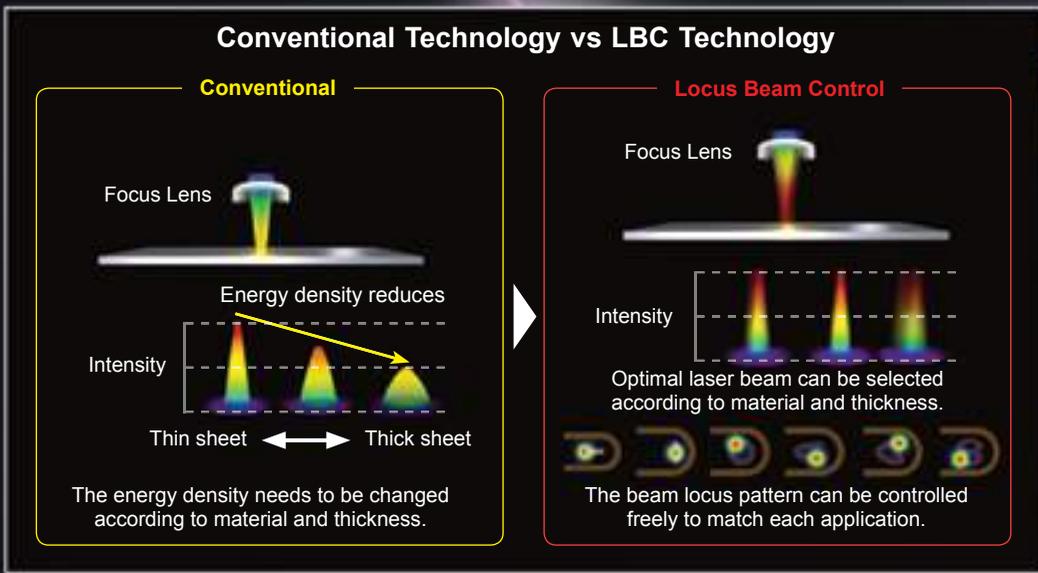
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AMADA's Carolina Technical Center and Manufacturing Center in High Point, NC will open in 2020.



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North American **DEBUT**



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- **HRB 1003** — The new HRB Series of Press Brakes leverages AMADA's latest bending technology and a variety of production-enhancing features to provide an outstanding price/performance ratio.

North American **DEBUT**

- **AMADA's latest 9kW Linear Fiber Laser Cutting System** — will be ceremonially unveiled at FABTECH.
- **ENSIS 3015 RI** — 3kW Fiber Laser with an integrated Rotary Index that enables you to switch from flat cutting to tube or pipe cutting in less than 2 minutes.
- **EML 2515 AJ** — 3kW Punch/Fiber Laser Combination Machine that's equipped with a multi-purpose turret and the unlimited shape cutting flexibility of a fiber laser which gives you the flexibility to work with your customers to create more efficient part designs.
- **ENSIS 9kW + AMS 3015 CL** — The ENSIS Fiber Laser and AMS CL Automation are both manufactured in Brea, CA. ENSIS technology provides continuous processing of thin materials and thick plate without a cutting lens change or manual setup. The AMS 3015 CL is a modular system that allows you to easily expand your automation capabilities as future demands evolve.
- **HG 1003 ARS** — A Fully-Integrated Robotic Bending System with a 7-axis robot, Automatic Gripper Changer (AGC), and Automatic Tool Changer (ATC) with patented AMADA tooling — that will enable you to achieve high levels of unmanned productivity.

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Learn About the Technologies Disrupting the Future of Manufacturing

With the pace of innovation being so fast, new things are being discovered daily. This is disrupting industry after industry.

As technology has advanced, it is becoming embedded into the day-to-day operations

of many fabricators and manufacturers. Every shop, therefore, needs to adapt to stay competitive. Yet the path toward digital transformation is different for every company.

The panelists at tomorrow's leadership exchange panel on disruptive technology will cover a wide range of disruptive technologies: 5G, Internet of Things (IoT), artificial intelligence (AI), robotics, virtual reality (VR) training, 3D printing and

automation. They will share case studies and help manufacturers understand and explore the challenges and benefits that implementing them entails.

John Brandt, CEO and Founder of global research firm The MPI Group has devoted more than two decades to studying leadership in effective, purpose-driven organizations. An expert on how companies can adapt themselves to the realities of new markets, new corporate structures, and evolving customer expectations, Brandt is an accomplished management innovator and an internationally recognized expert on manufacturing and technology.

Before founding The MPI Group in 2003, he had two decades of experience in marketing, management, and consulting. His passion for journalism earned him more than twenty awards for reporting, writing and editing. He is also the author of the best-selling book *Nincompoopery*, which details how bad customer service, poorly designed business processes, and ineffective management practices can often lead to lost time, patience and profits. He will detail research findings from thousands of companies to offer concrete examples of how any organization – large or small, and regardless of industry – can innovate in ways that delight customers and attract top-level talent.

"We are experiencing an incredibly rapid evolution of the business model in which data and information about the manufacturing process may be more valuable than the products themselves," said Brandt. "This is exciting but dangerous: firms that embrace and invest in these new technologies will find themselves with incredible opportunities for productivity and profits. Firms that don't may find themselves permanently blocked from market share in many sectors."

In his presentation, he will cover how some firms successfully leverage the Internet of Things (IoT) to connect with customers in new ways, creating feedback loops that increase value for both the manufacturer and the customer. This is leading to new approaches to traditional business. For example, manufacturers have traditionally either sold or leased equipment or products. However, a developing concept, is to offer customers products and tools on a subscription or service basis. This idea is well established in software and is now moving over into other industries.

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continued on p. 24

TUESDAY, NOVEMBER 12

SCHEDULE-AT-A-GLANCE

TECHNOLOGY	8:00 AM – 9:30 AM	10:00 AM – 11:30 AM	12:00 PM – 1:30 PM	2:00 PM – 3:30 PM	
3D/ADDITIVE MANUFACTURING		■ F60: Fundamentals of Additive Manufacturing Room S403A	■ NEW! F70: Small & Large Format Printers for Additive Manufacturing Room S403A	■ NEW! F80: How Additive Manufacturing Can Accelerate and Advance Your Design Room S403A	
AUTOMATION		■ NEW! F61: Estimating and Job Costing for Industry 4.0 - The Science of Costing and the Art of Pricing Room S401D	■ NEW! F71: The Full Potential of Automation and Lights-Out! Room S401D	■ F81: IIoT Solutions to Better Manage Your Assets Room S401D	
CUTTING		■ F62: Optimization of Cutting Metals with Fiber and Plasma Machining Room S404A		■ F82: Comparative Cutting Innovations with Tech Tour Room S404A	
FINISHING	■ NEW! C50: Lean and Green Cleaning Room S501A	■ NEW! C60: Mother Earth Still Needs Our Help Room S501A		■ C80: Identifying and Solving Finishing Defects - See It, Touch It, Fix It Room S501A	
	■ NEW! C51: Powder System Design for Success Room S501BC	■ NEW! C61: How It's Made: Knowing Where Your Powder and Equipment Come From Room S501BC		■ C81: Lean and Mean - Making Powder Systems Work Room S501BC	
	■ NEW! C52: 1K, 2K, New K and Fluid Delivery Methods Room S501D	■ NEW! C62: Oven Selection Solved Room S501D		■ C82: Make Safety a Priority Room S501D	
FORMING & FABRICATING		■ F63: Effective Safeguarding Risk Assessment Room S502A	■ NEW! F73: Dust Collection for Fabrication Processes Room S502A	■ F83: Sheet Metal Design and Press Brake Automation Room S502A	
		■ F64: Coil Processing: Blanking Techniques and Handling Solutions Room S502B	■ NEW! F74: Roll Forming: Design and Welding Techniques Room S502B	■ F84: Roll Forming: Justification and In-Line Punching, Cutoff Dies Room S502B	
LASER		■ NEW! F65: Quality & Control for Laser Joining Systems Room S403B	■ NEW! F75: Accelerated & Combination Lasers for Sheet Metal Room S403B Room S403B	■ NEW! F85: Traditional & Fiber Laser Cutting for High Performance Room S403B	
LEAN	■ NEW! F56: Lean Principle: Leadership and the Lean Journey Room S401A	■ F66: Lean Tools: Value Stream Mapping – Addressing Differences Between the Office and Shop Floor Room S401A	■ F76: Lean Tools: A3 Thinking - Developing People & Solving Problems Room S401A	■ F86: Lean Tools: Standard Work for Quality and Improvement Room S401A	
MANAGEMENT	■ F57: Building a Competitive Advantage: Know What Your Business is Worth and Tax Credit Advantages Room S404BC	■ NEW! F67: The Dark Cloud Behind the Silver Lining: Economy in 2020 Room S404BC	■ NEW! F77: Planning for the Future: The New Dawn of Manufacturing and Technology Room S404BC	■ NEW! F87: ERP Systems: Selection & Avoiding the ERP Technology Grim Reaper Room S404BC	
MARKETING & SALES	■ NEW! F58: Customer Experience for Manufacturers to Create Digitally-Powered Journeys That Help People Grow Room S405A	■ NEW! F68: Sustainable Social Media Strategies Room S405A	■ F78: Strengthen Your Marketing Through The Power of Story & Grow Your Revenue & Grow Your Team Room S405A		
SMART MANUFACTURING	■ NEW! F59: Productivity, Performance & Quality Management for Smart Manufacturing Room S402B	■ NEW! F69: Quit Making Excuses and Close the Loop - Now is the Time to Digitize Room S402B	■ NEW! F79: From Rust-Belt to High-Tech: Transform, Ignite and Disrupt Room S402B	■ NEW! F89: Artificial Intelligence for Machine Learning & Streamlining Quoting Process Room S402B	
STAMPING	■ NEW! S50: Materials-1 Room S503A	■ NEW! S60: Materials-2 Room S503A		■ NEW! S80: Materials-3 Room S503A	
	■ NEW! S51: Connectivity-1 Room S503B	■ NEW! S61: Connectivity-2 Room S503B		■ NEW! S81: Connectivity-3 Room S503B	
WELDING FABRICATION		■ NEW! W600: Resistance & Arc Welding For Better Weldability and Hazard Reduction Room S404D		■ NEW! W800: Improving Lightweight Materials Joining Through Friction Welding Room S404D	
WORKFORCE DEVELOPMENT	■ NEW! F214: Engaging Manufacturing's Next Generation Through Full Contact Innovation Room S401BC	■ NEW! F215: Conflict & Communication For Strong Leadership Room S401BC	■ NEW! F216: Leadership Skills & Development Workshop (12:00 PM - 4:30 PM) Room S401BC		
WELDING					
SEMINARS	■ W11: AWS Educational Overview of Welding Codes and Standards - Day 1 Room N133			8:00 AM	5:00 PM
	■ W12: Applied Welding Metallurgy Room N226			8:00 AM	4:00 PM
	■ W13: WPS's for Weld Inspection and Test-Taking Tips Room N131			8:00 AM	12:00 PM
CONFERENCES	■ W16: 5th International Electron Beam Conference - Day 1 Room N227B			8:00 AM	5:00 PM
PROFESSIONAL PROGRAM	■ W24: SESSION 4: Solid-State Processes Rooms N138-N140			8:00 AM	12:00 PM
	■ SESSION 5: Surfacing & Dissimilar Joining Rooms N138-N140			8:00 AM	12:00 PM
	■ SESSION 6: Welding Metallurgy I Rooms N138-N140			8:00 AM	12:00 PM
	■ SESSION 7: Neural Networks & Machine Learning Rooms N138-N140			1:40 PM	5:00 PM
	■ SESSION 8: Additive Manufacturing II Rooms N138-N140			1:40 PM	5:00 PM
	■ SESSION 9: Welding Metallurgy II Rooms N138-N140			1:40 PM	5:00 PM
RWMA SCHOOL	■ W22: RWMA Resistance Welding School - Day 1 Room N227A			8:00 AM	5:00 PM
EDU. SESSIONS	■ W29: AWS/Weld-Ed Education Conference - Using Advanced Waveforms in Welding Education Room N132			9:00 AM	4:30 PM
SPECIAL PROGRAMS	■ W31: AWS Awards/AWS Foundation Luncheon Room N228			12:00 PM	2:00 PM

Detailed Education Program session descriptions, speakers, pricing, room locations and more can be found at fabtechempo.com/edu.

■ = Basic ■ = Intermediate ■ = Advanced

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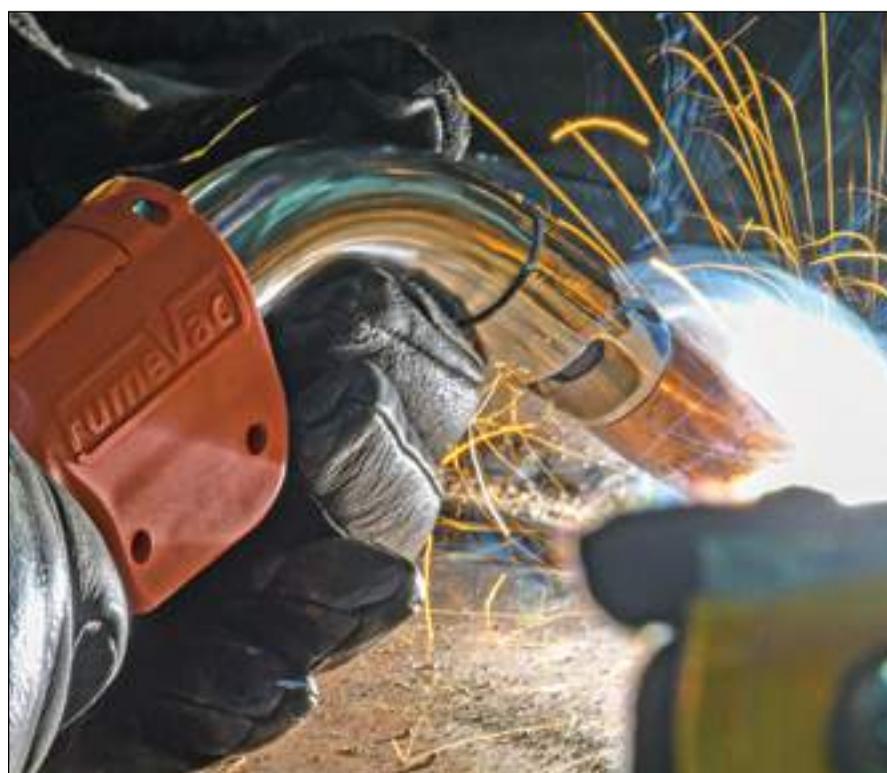
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Women in Finishing Expands Programming

The Chemical Coaters Association International (CCAI) began its Women in Finishing (WiF) initiative at FABTECH 2017 with a networking reception in the CCAI booth. The response exceeded expectations, leading to the official establishment of WiF under CCAI. The overwhelming response coupled with member feedback led to a program expansion effort in 2019 with a focus on professional development and networking for women with careers in industrial finishing, including the Women in Finishing FORUM.



The inaugural Women in Finishing FORUM was held in May 2019 at the University of Notre Dame. Bringing together women representing suppliers, OEMs and custom coaters in a variety of job functions within industrial finishing, the event featured a variety of professional development, team building, and networking sessions all geared towards women in the industry. Sessions were led by speakers from the University of Notre Dame, subject matter experts, and women in industrial finishing. Topics were diverse, ranging from industry trends and opportunities to navigating conflict, building a championship mindset, and the impact wellness has on success.

After a highly successful inaugural event, CCAI announced in August that the 2020 Women in Finishing FORUM will return to the University of Notre Dame and is scheduled for May 6-8. "Building on the success of



this year's event, program development is nearly complete for 2020 and we expect significant growth for next year's FORUM," shared Sheila LaMothe, Women

in Finishing program director. Confirmed speakers include, Shelley Bausch, president of Carlisle Fluid Technologies; Lee Ann Schwoppe Cochran; principal with Amorpha Consulting; and Dr. Amber Selking, director of people performance, Lippert Components Inc. The program will also include a tour of Lippert Components' finishing operations.

For more information and to register, visit womeninfinishing.org.

The newest addition to WiF programming is a webinar series designed to address relevant topics that impact both the personal and professional lives of women in the finishing industry. Led by Susan Hines of Sabal

Trust the first webinar, Women + Wealth was held in October and featured a lively discussion on the importance of sound financial planning. Susan shared critical information that is relevant regardless of whether participants were just starting their career or have their eyes on retirement.

continued on p. 28

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Veterans Wow FABTECH With Inspirational Stories

continued from p. 6

manufacturing career field. Skills such as plasma cutting, welding, computer aided design, milling, machining, fabrication, and woodworking are taught by WFW via training courses and workshops.

How did WFW come into being? As a former U.S. Navy officer with combat tours in Afghanistan and Iraq, Prado met a friend he had served with who had lost both of his legs in combat.

"I saw many of my fellow service members feeling lost with no path to a successful civilian life. I needed to change that," said Prado. "We wanted to help them to have a wage that could support a family. Welding and machining were very much in demand and were activities the veterans liked to do."

Based in San Diego, WFW is funded by private individuals and foundations. 83% of revenue goes towards training programs.

This level of low overhead is achieved by actively partnering with the military, business, industry and education sectors, as well as other nonprofits, individual supporters and donors, and community foundations. The organization provides vets and wounded warriors with the best possible equipment, supplies, and software and gets them placed in some of the best companies in the world. 94% of his students find jobs, primarily in welding and machining.

Workshops for Warriors teaches and certifies to the nationally recognized standards of the American Welding Society, National Institute of Metalworking Skills (NIMS), Mastercam University, SolidWorks, Immerse2Learn, and the National Coalition of Certification Centers (NC3). Specific courses include WFW advanced manufacturing classes in welding, CAD/CAM programming (SolidWorks and Mastercam) and CNC machining (CNC milling, CNC turning, CNC laser, and CNC wa-

terjet). These courses have helped to create a national training pipeline to increase the manufacturing workforce while providing employment to veterans. Students gain their skills through classroom education and extensive hands-on-training on eleven CNC HAAS mills and lathes, an AMADA laser, flow water jet, and 18 welding booths.

Since 2008, WFW has trained and placed 613 LMI Marines, Army, Air Force, Coast Guard and Navy veterans into high-paying careers with companies like Fox Racing, Ariel, General Dynamics, NASSCO, SPAWAR and SpaceX. Their average annual salaries are around \$60,000. Prado sees his mission as not only serving veterans but serving the nation as a whole.

"America has long been recognized as the global leader in manufacturing innovation; but without a solid arsenal of qualified individuals to fill the 2.3 million advanced manufacturing job vacancies that exist

today, our status as the undisputed leader in this critical space will continue to erode," said Prado. "Not only does this threaten the future vitality of our manufacturing base, it threatens America's readiness to stave off the attacks of any foreign adversary."

Jason T. Ray, Co-Founder and CEO, Paperless Parts, is another veteran who has found success in the business world. He received a commission as a Supply Officer in the United States Navy. He served on a Mine Countermeasures Ship and witnessed the challenges with aging supply chains.

"This experience got me into naval procurement and eventually manufacturing focused roles," said Ray. "That led me to form Paperless Parts, a company that has developed software to help manufacturers quickly catch problems, identify required

continued on p. 26



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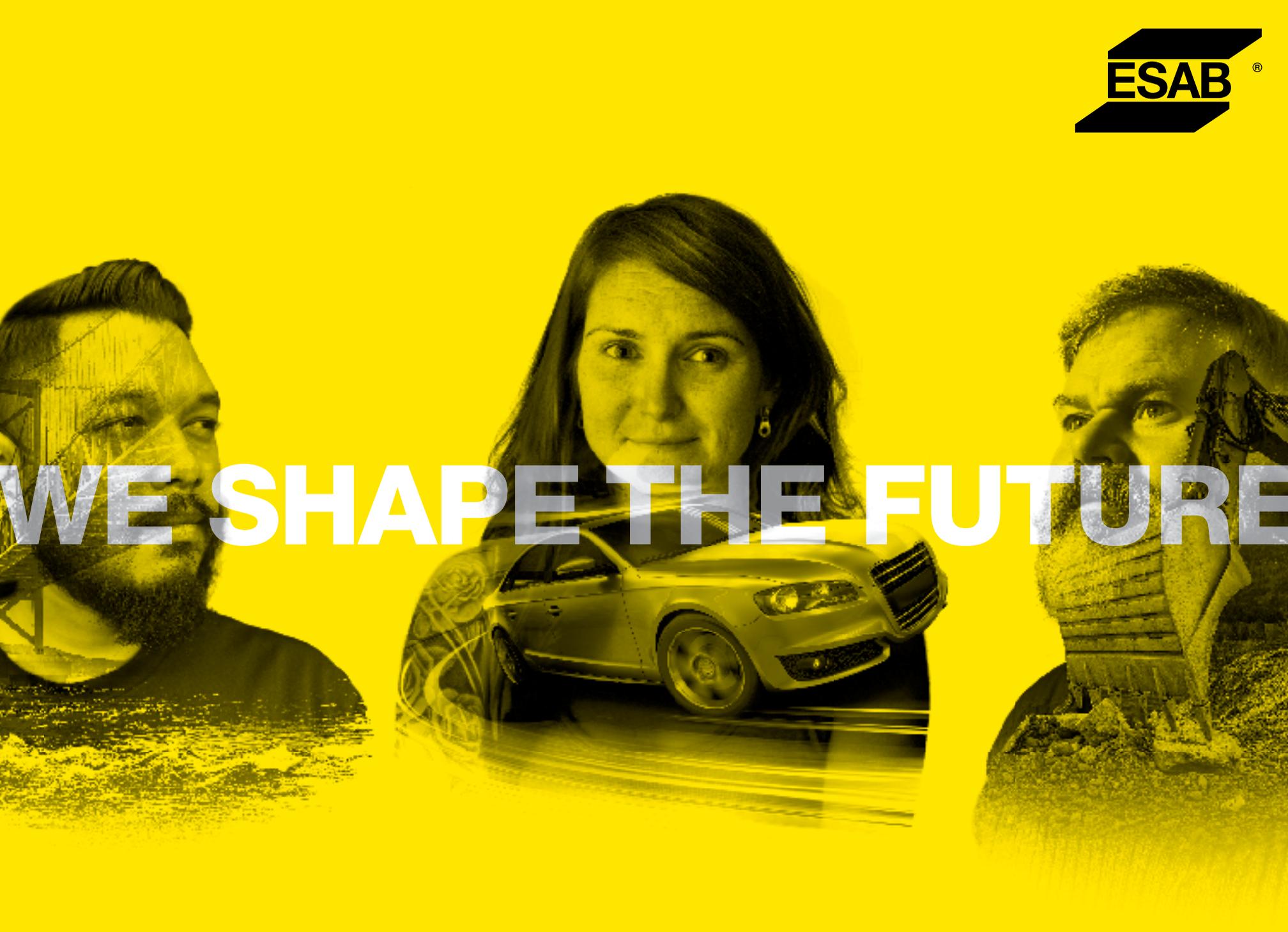
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A photograph of three people—a man on the left, a woman in the center, and a man on the right—looking towards a silver car. The car is positioned in the center of the frame, and the background is a bright, yellowish-green gradient. The text "WE SHAPE THE FUTURE" is overlaid in large, white, bold, sans-serif capital letters across the middle of the image.

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Learn About the Technologies Disrupting the Future of Manufacturing

continued from p.18

Another featured speaker on the panel is Dave Beck, Founder and Managing Partner of Foundry 45. His company has been working in immersive technology since 2011. It is now considered one of the largest and most

experienced virtual reality (VR) training companies in the world. Its client partner roster includes Delta Airlines, Coca-Cola, IBM/The Weather Company, AT&T and U.S. Bank. "Our mission is to advance the efficiency

of enterprise process training through the effective use of virtual reality technology," said Beck.

He will explain how disruptive technologies such as VR have changed the way we create,

build, and distribute assets across the world, making supply chains more efficient and faster than ever before. Yet there's one major hurdle manufacturers must overcome to thrive in this new digital reality – a shortage of skilled labor.

In an industry where time is of the essence, an aging workforce coupled with low retention and an ever-shrinking talent pool is impacting productivity, and most importantly, the bottom-line. To be more effective, profitable, and productive, manufacturers must change their approach to workforce development.

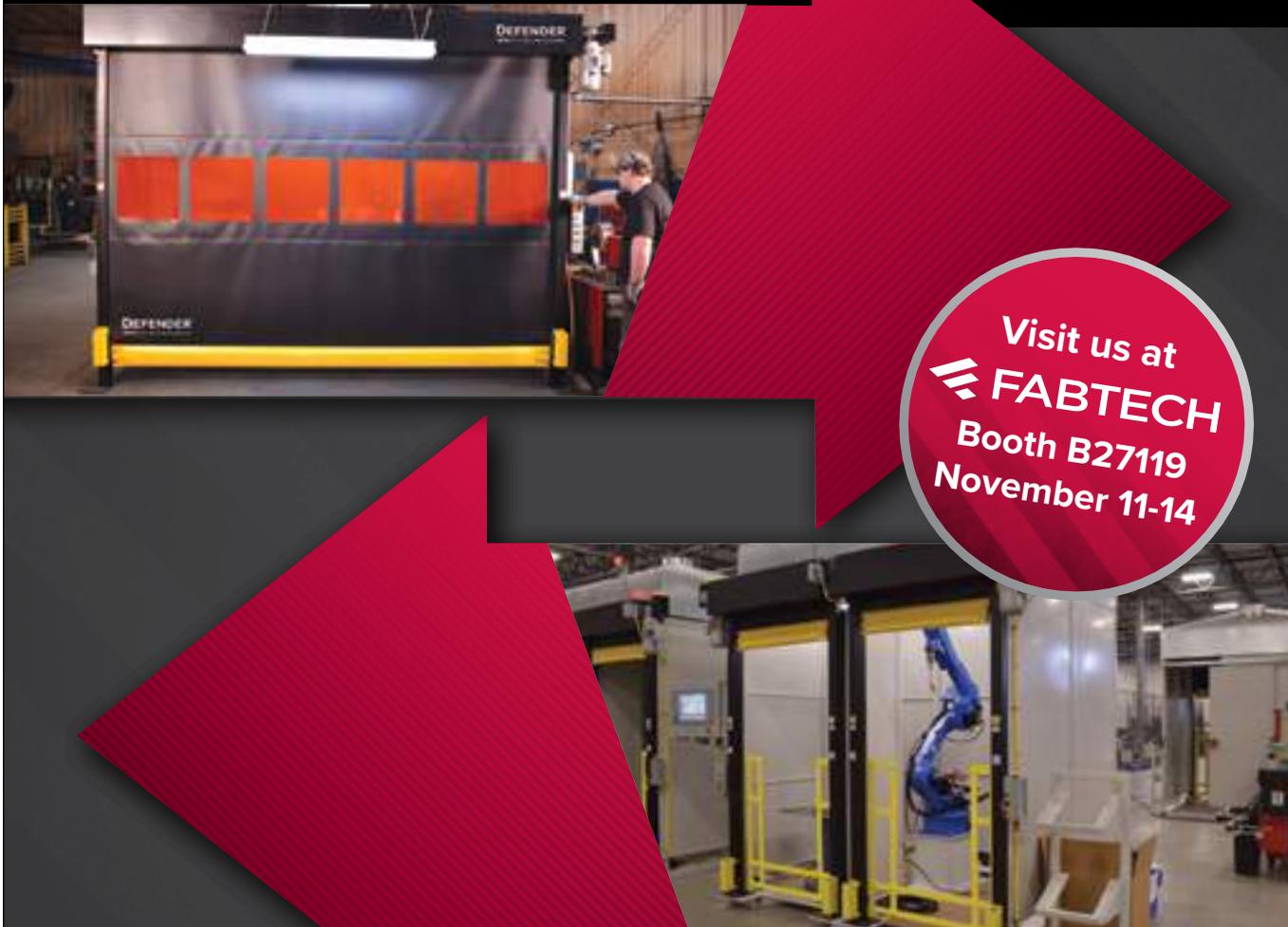
"One of the most compelling benefits of VR training is being able to significantly improve workforce safety through experiential learning," said Beck. "When we immerse trainees in dangerous virtual scenarios and give them the ability to make mistakes in a consequence-free environment, that's a huge win."

Markforged is another company transforming the face of manufacturing with revolutionary metal and carbon fiber 3D printers. These machines can produce parts tough enough for the end-user in automotive, oil and gas, aerospace and in harsh factory environments. Greg Mark, Founder and CEO of Markforged, will talk about how AI has brought about a new form of manufacturing known as adaptive manufacturing.

"With the help of AI, a machine can know what it's doing, and make intelligent decisions, at any moment," said Mark. "Applied to physical equipment, AI allows machines to rewrite their own code, enabling the technology to improve upon itself."

His company offers Blacksmith, the first AI-powered software that makes manufacturing machines self-aware. Blacksmith analyzes a design, compares it to the scanned part, and automatically adapts the end-to-end process to produce the perfect part. It continually learns and adapts to variations in the process over the lifetime of your machine. This technology is a breakthrough advancement in smart factories and a good example of adaptive manufacturing. It takes the inspection and manufacturing technology the industry knows well and closes the process loop to repeatedly and reliably produce the part. It improves part yields and cuts down on wasted materials. It also enables each person to effectively run more machines, increasing their productivity, and enabling their products to be globally competitive and locally sourced.

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Veterans Wow FABTECH With Inspirational Stories

continued from p. 22

hardware or tooling, and collaborate with their teams at every step of the manufacturing process.”

His company is focused on supporting job shop manufacturers. This includes tools that can save a job shop time in providing a quote or help new machinists learn the trade faster while working on the shop floor.

FABx also featured Mission: Ambition, a

woman-owned and veteran-owned small business. It equips, trains, and educates military and civilian personnel on intelligence and professional development modules, both virtually and in-person. The company is run by educational consultant Shelly C. Rood.

Her military experience was primarily in strategic operational planning at the highest level, including the present conflict with

North Korea. She is a Distinguished Military Graduate from Western Michigan University ROTC and served in the U.S. Army Reserves across a 16-year time span as a 35D (Tactical All-Source Intelligence Officer), with periods of active duty throughout.

“In 2018, Mission: Ambition launched a women’s lifestyle brand to sell natural beauty, wellness, and lifestyle gifts curated by

female veterans,” said Rood. “Every package includes the story of a U.S. female hero and a portion of store proceeds supports efforts to increasing mental resiliency in women.”

The final FABx speaker Michael Walton, Industry Solution Executive for Manufacturing at Microsoft, has more than 31 years in the Army Reserves as a Combat Engineer Officer, as well as 34 years working mostly with manufacturing and consumer packaged goods organizations.

Walton collaborates with Fortune 500 manufacturers to introduce game-changing strategies and technologies into their manufacturing operations. He’s passionate about helping them capture and leverage their data, cloud, machine learning, and artificial intelligence to revolutionize every aspect of their processes, production, and products including areas such as forecasting, quality, predictive maintenance, connected field services, and remote monitoring.

He talked about the various ways manufacturing is being transformed in the digital age. He gave the example of Microsoft HoloLens smart glasses which are being used on the shop floor to aid in assembly line production, maintenance, repair, and in many other ways. “Such tools also provide an enhanced ability to configure products, as well as a way to experience a product before purchase,” he said. ■



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Emerging Manufacturing Technologies Showcased

continued from p. 15

Additionally, nearly half of all reported breaches were related to intellectual property theft. This is particularly important when you consider that manufacturers in the United States perform more than three-quarters of all private-sector R&D in the nation.

“As the driver of more innovation than any other sector, manufacturers need to become more aware of these risks and improve their cyber posture, whether they are large OEMs or small manufacturers forming part of a larger supply chain,” said Brown.

MxD has already invested close to \$100 million in more than 60 applied research and development projects in areas including design, product development, systems engineering, future factories, supply chains and cybersecurity. For example, it has launched a comprehensive workforce development program for cybersecurity in manufacturing underwritten with a \$1.25 million grant from the Siemens Foundation. The grant will help to fund the development and implementation of a highly skilled cybersecurity for manufacturing initiative as part of MxD’s workforce strategy known as MxD Learn.

This is vitally needed. Two-thirds of respondents in a Global Information Security Workforce study said they lacked the cybersecurity professionals needed. The shortage of these skills is especially acute in manufacturing and fabrication. With an increasing number of cyber threats to operations, U.S. companies urgently need qualified workers to protect against cyberattacks as they invest in modern technologies to digitize their operations.

MxD Learn will also be implemented at high schools in Chicago, as well as forging connections with other high school programs, area apprenticeships, community colleges, and industry partners. The goal is to create workable models that can be used by others in the field.

“Career and technical education in high school and beyond is essential to address the growing manufacturing skills gap in the United States,” said Brown. “This effort will help cultivate the skillset needed for the factory of the future – where data science and programming are as much a part of day-to-day activities as welding and machining.”

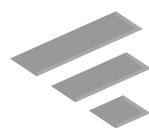
Geometry Drives Everything

Paperless Parts is another company on the forefront of advanced manufacturing. It was founded on the premise that in manufacturing, geometry drives everything. The company created the Part Operating System (PartOS). Powered by an advanced geometric analysis engine, PartOS is an operating

system tailored to manufacturing. With this system, manufacturers can quickly catch DFM issues, identify required hardware or tooling, and collaborate with their teams at every step of the manufacturing process. This cloud platform helps manufacturers unlock hidden insights, modernize their business and expand more rapidly.

“Manufacturers using PartOS increase win rates and reduce time spent on estimating, quoting and order processing,” said Jason T. Ray, Co-Founder & CEO of Paperless Parts. “We use a proprietary 3D model analysis engine to drive and expand our understanding of how different geometries correlate to a variety of manufacturing processes.”

continued on p. 28



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Emerging Manufacturing Technologies

continued from p. 27

The company aims to provide smaller manufacturers and job shops with the kind of costing, estimation, and other tools previously only available to large producers. Large-scale manufacturers can afford to spend millions on software implementation projects. Ray formally released PartOS at FABTECH.

Michael Walton, Industry Solution Executive for Manufacturing at Microsoft, was the final panelist to cover advanced manufacturing. His company takes a leadership role in forwarding trends such as smart glasses, digital manufacturing software, cloud-based enterprise resource planning (ERP) and more.

Its HoloLens smart glasses, for example, are finding their way onto shop floors in large numbers. These glasses enable manufacturers and fabricators to have hands-free access to documentation, job specs and other details while actively welding or performing other shop floor tasks. ■

Technologies Disrupting the Future of Manufacturing

continued from p. 24

“The number one challenge we face with disruptive technology is education,” said Mark. “When you introduce any breakthrough, it’s going to take a while for everyone to understand the process and how it can be leveraged to improve their business.”

At the panel on disruptive technologies, you will also hear from Mo Abuali, Managing Partner at IoTco. As a pioneering force in the Internet of Things, he will provide the audience with tangible examples of how the IoT can enhance existing operations. Far from being a complex technology that will require months or even years to implement, he lays out how the IoT can be gradually introduced to the factory floor. Abuali and the other panelists will engage in a lively discussion on the value of various technologies and the best ways to add them to current work processes.

Don’t miss this thought-provoking panel session tomorrow, Wednesday, November 13 at 12:30 PM in the Lakeside Center Ballroom. ■

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Women in Finishing Expands Programming

continued from p. 21

The webinar format makes participation easy, cost effective, and serves as a great addition to a company’s employee training plan. Participation is free for WiF members and \$25 for non-members. All webinars are recorded and archived for those who cannot attend live webinar.

The FABTECH 2019 Women in Finishing Reception will take place in the CCAI booth (B13026) tomorrow Wednesday, November 13 at 4:00 PM. Refreshments will be served. Information on WiF programming, including a preview of the 2020 FORUM, is available in the CCAI booth throughout FABTECH and during the reception.

To become a WiF member, visit www.ccaibweb.com/WiF.

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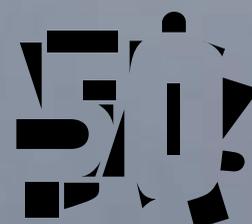
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At FABTECH 2019, the theme of CLOOS Booth B27062 is “100 Years CLOOS: Pioneers of Welding Technology” as the long-established company celebrates its 100-year anniversary. CLOOS will present innovative solutions for the future of welding technology.

The welding specialists offer technologies from the entry level to the premium and from manual welding machines to automat-

ed robot systems, all from a single source. Visitors can experience the wide range of QINEO welding machine in live-demonstrations. The focus is on the new QINEO Next. The high-tech MIG/MAG welding power source provides excellent arc characteristics for highest weld quality. The modular design allows many utilization possibilities – from the basic welding machine for manual weld-

ing to the multiprocess welding machine for automated robot welding.

CLOOS will also show new and proven welding processes for maximum productivity and quality. For instance, the new process MoTion Weld for automated MIG/MAG welding will be on display. Due to the controllable heat input into the workpiece and the minimized



The new high-tech MIG/MAG welding power source QINEO Next offers excellent arc characteristics for highest welding quality.



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spatter formation at high welding speeds, the MoTion Weld processes are particularly suitable for thin plate applications.

Another highlight is the new Gateway C-Gate by CLOOS. This enables demand-based management of welding and robot data. All information is entered and processed centrally in an integrated information and communication tool. The new system consists of the system-related hardware and different software modules. With the production module users can illustrate the performance and the efficiency of their robot systems, localise shortages, and increase the efficiency.

Furthermore, CLOOS presents the new QIROX Micro Cell, a customized “Ready to Weld” solution for the automated welding of small parts. With the QIROX Micro Cell, CLOOS offers a basic solution for the fast and easy entry into automated welding technology. The package includes all important components: A six-axis articulated arm robot with a load capacity of 4 kg, the complete welding equipment with gas-cooled welding torch, and safety technology.

**Visit CLOOS at FABTECH 2019:
Booth B27062**

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Robot and Welding
Technology From a Single
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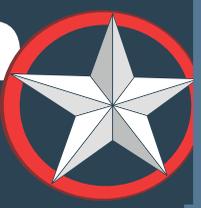
Since 1919, Carl Cloos Schweißtechnik GmbH is one of the leading companies in welding technology. About 750 employees all over the world realize production solutions in welding and robot technology for industries such as construction machinery, railway vehicles, automotive, and agricultural industry. The CLOOS welding power sources of the QINEO series are available for a multitude of welding processes. With the QIROX robots, positioners and special purpose machines CLOOS develops and manufactures automated welding systems meeting the specific requirements of the customers. The special strength of CLOOS is the widely spread competence. Because – from the welding technology, robot mechanics and controller to positioners, software and sensors – CLOOS supplies everything from a single source. ■

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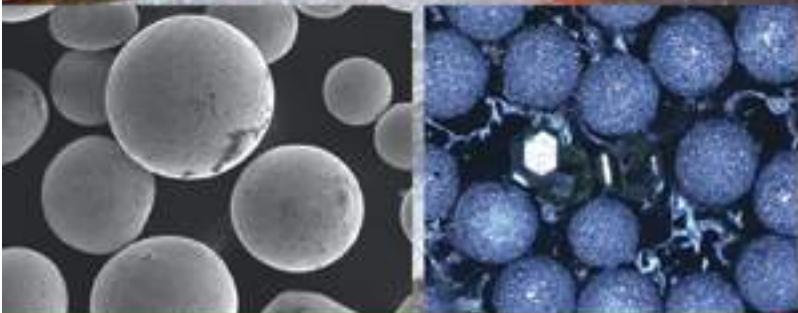
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