The FABx Tech Talks

Exciting New Format Unveiled at Opening Keynote Presentation

Nearly three decades ago, the TED (Technology, Entertainment, Design) Conference became an annual event; since then, its signature TED Talks have become a well-known and keenly followed avenue to hear some of the most interesting people on Earth communicate their vision and passion. The first six TED Talks were posted online on June 27, 2006; by September they had reached more than one million views. TED Talks proved so popular that TED’s website was relaunched around them, giving a global audience free access to some of the world’s greatest thinkers, leaders, and teachers.

With a grateful tip of the hat to that organization, FABTECH introduced the FABx Tech Talks around that storytelling concept, where some of the industry’s leading thinkers communicated their passion and perspective on the topics of transformation, growth, advancement, and expansion for the future of manufacturing. Yesterday’s opening keynote marked the inauguration of FABx Tech Talks. From the size and enthusiasm of the audience, we hope to continue them as an ongoing part of the FABTECH experience.

A Star-Studded Cast of Presenters

Yesterday’s audience was treated to talks by six visionaries in the manufacturing/fabricating sector, ranging from a pair of Detroit-based entrepreneurs and a well-known television personality to a world-renowned sculptor and a pair of young leaders from two of the nation’s leading organizations:

Adam Genei, Founder, Mobsteel
Mobsteel is a design/build company that manufactures automotive aftermarket products and builds custom cars while celebrating the history of the automobile and the Motor City. It’s a modern-day testimony to the old-time values of sweat and hard work, and a great example of the new entrepreneurship in manufacturing.

Jesse James, Founder, West Coast Choppers
Although it began in the early 1990s, West Coast Choppers first gained notice with the...
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FABTECH is the perfect opportunity to get connected with TRUMPF. With best in class equipment, automation components, vertical software solutions and experts that guide you every step of the way, TRUMPF is in the best position to support your smart factory. The demands of producing a high volume production of parts with smaller lot sizes require solutions that stay connected, adapt quickly and operate efficiently. TRUMPF provides solutions from stand alone machines to full systems across a wide range of processes. If efficient manufacturing is in your future, we invite you to stop by our booths at FABTECH and start your smart connection today.

FABTECH Booths A2601, B11013, B103 / www.trumpf.com
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FABTECH is just around the corner – Visit Mitsubishi’s booth A2619 and see how ZOOM Fiber technology is changing the game. Are you moving towards industry 4.0? Learn about Mitsubishi’s Remote 360 application and how it’s revolutionizing business. That’s not all – Press Brake, Automation, CO2 laser, 5-axis laser, milling and turning equipment will all be on display!!!
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Experience “Innovation Drives Success – The Future of High Performance Manufacturing” at the Bystronic Booth A1819

Innovation is the driver of high-performance manufacturing and the key to competitive differentiation. Innovative thinking is at the core of Bystronic solutions. The company recognizes it’s no longer how a single piece of machinery will affect the fabrication process, but how all the machines and supporting software technologies work together to create a cohesive and effective fabrication solution.

The new high performance ByStar Fiber with 10kw Fiber Laser achieves the competitive differentiation sought by leading edge manufacturers. ByStar Fiber has been designed from the ground up to meet the speed and acceleration demands from high power Fiber lasers. The ByStar Fiber is available with 3kW, 4kW, 6kW, 8kW or 10kW Fiber laser power and with optional ByTrans Extended automated material loading/unloading.

Mobile robot automation meets high-speed bending with the new Xpert 40 Mobile Bending Cell, a compact solution for automated as well as manual bending that supports today’s fluctuating lot sizes and varying part complexities.

To satisfy the increasing demand for high-speed, mobile bending systems, Bystronic will introduce the Xpert 80 Mobile Press Brake. With a bending length of up to 60 inches and a press capacity of 88 U.S. Tons, the Xpert 80 opens up a wide spectrum of applications for bending complex, small and medium size parts.

The Xact Smart 160 Press Brake combines high bend accuracy with advanced features in an affordable, high-value package that enables a fast entry into bending technology. Xact Smart 160 is now available with a 5-axis back gauge, extended open height, and Energy Saver.

Bystronic is expanding the bending process with automated tool changing. The Xpert Tool Changer with integrated 6-axis robot, is a compact automation solution for users who want to save set-up time and increase productivity. Operators can prepare for the next job while the robot changes the tooling. The ability to work simultaneously, and with tooling located directly at the press brake, saves up to 70% in set-up time.

Bridging performance with lower investment costs, BySmart Fiber is designed for users who are looking for quality machine performance at a lower investment cost. BySmart Fiber is available in 2kW, 3kW or 4kW Fiber laser power and with optional ByTrans automated material loading/unloading.

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Bystronic MES (Manufacturing Execution System) is a new software solution developed by Bystronic that creates digital transparency across the entire process chain. MES allows users to plan, direct and evaluate work flows according to defined timelines.

ByCockpit is a new app developed by Bystronic which provides real-time analysis and visualization of the data associated with sheet metal processing. ByCockpit visualizes selected key indicators regarding machine performance and manufacturing efficiency.

Together, these new innovations are driving fabrication companies to new levels of productivity, profitability and success. Visit Bystronic at booth A1819.
Innovation Drives Success

Experience Innovation at FABTECH Booth A1819

See why Bystronic continues to be the leader in high performance manufacturing technologies and your key to competitive differentiation.

**NEW – ByStar Fiber 10kW with ByTrans Extended**
Designed for Fiber. Unrivaled for Speed.

**NEW – Xpert 40 Mobile Bending Cell**
High-Speed Bending meets Robot Automation

**NEW – Xpert 80**
High-Speed Mobile Bending with increased Bending Length and Press Capacity

**NEW – Xact Smart 160**
The Smart Choice in Performance Bending

**NEW – ByCockpit**
Real-time Information for Sheet Metal Processing

**NEW – Bystronic MES Software**
The Ultimate Navigation System for Production Management

**Additional Demonstrations and Services:**
- BySmart Fiber 3kW – Bridging Performance with Lower Investment Costs
- Xpert Tool Changer – The Set-up Accelerator
- BySoft 7 – Make It Easy
- ByFinances – Turning Dreams into Reality

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Modern manufacturing facilities are becoming more sophisticated, requiring a highly skilled workforce capable of operating world-class technologies. But, as smart manufacturing – i.e., automation, robotics, and the industrial internet of things (IIoT) – transforms the industry, manufacturers are challenged to find and retain employees with the knowledge and experience to keep up to speed with change in today’s plants.

While some companies feverishly integrate more state-of-the-art technologies into their facilities, the groundswell of people lacking strong technical expertise continues to escalate, creating a mounting skills gap that threatens a company’s competitiveness, productivity, quality, innovation and profitability.

For companies to grow and compete successfully in the marketplace, these businesses must develop training programs that will enhance the skills of their current employees and level set new talent entering the workforce. Doing so will make room for improved productivity, more efficiency and better engaged employees.

A training tool that makes sense
There are a variety of measures manufacturers can take to drive their workforce training needs. Apprenticeships are a proven solution to closing the skills gap that combine customized online or classroom training with hands-on experience that provide a direct line to skills enhancements and workforce expansion.

These programs provide on-the-job training (OJT) to individuals new to the workforce as well as incumbent workers who are looking to upgrade their current skills in areas such as machining, welding, mechatronics, CNC programming and engineering.

Yesterday to today
Manufacturing has long been an OJT industry, relying on new employees to learn from more seasoned and experienced coworkers. However, in today’s advanced technology climate, a “watch-what-I-do” training program is no longer sufficient to build a stable, reliable and safe workforce. Consequently, over the years, apprenticeships had fallen off the radar as a training option for employers and haven’t kept pace with the current demands of advanced manufacturing.

Consider:
Your current employees have skills to share: An aging workforce takes valuable skills with them when they retire. In 2015, more than 20 percent of manufacturing’s workforce was 55 years or older. As more and more of these baby boomers reach retirement age, we’re seeing an exodus of skilled workers leave their companies without a systematic way of capturing and transferring their valuable knowledge.

You need workers today: You can’t wait for a qualified, capable employee to complete college before they start working for your company. With apprenticeships that combine related instruction with on-the-job training, employers get a highly skilled worker able to contribute sooner than traditional educational routes.

And high-performance organizations are 4.5 times more likely to grow existing apprenticeship programs — or start one. They’ll receive $1.47 in increased productivity and greater innovation for every dollar invested in an apprentice.

However, gone are the days of informal, time-based programs that merely focus on completing education hours combined with OJT hours. The old apprenticeship system lacked an industry-wide standard, leaving companies with the task of doing the heavy lifting to carry out the program design, implementation and management.

Today’s apprenticeship model is quite different. It is now geared toward an industry

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continued on page 28
Technology. Dedication. Service. That’s us in three words. For over 60 years, BLM GROUP has developed state-of-the-art systems for processing tube, bar and special sections to make production more simple, more innovative and more efficient. Whether it’s laser cutting, bending, sawing, end-forming or machining centers, our tube technology makes the difference. See how at FABTECH 2017 in Booth B11010.
Products Finishing Top Shops Honors Best Coating Shops

The Products Finishing Top Shops Benchmarking Survey for liquid and powder coating shops was recently completed, resulting in 50 shops being named a Top Shop and four being highlighted for their exceptional operation.

- Safeway Services in Rockford, Illinois:
  Tom Lynde doesn’t want to be just anyone’s custom coater. The owner of SafeWay Services, a painting and powder coating provider in Rockford, Illinois, wants to be more than just a hired hand.

“We quote projects for companies from all over the Midwest, but we prefer customers who are looking for a relationship with their suppliers,” says Lynde, whose family-owned business was started in 1989 and this year finished as the No. 1 family-owned business was started in

- Tri-State Fabricators in Cincinnati, Ohio:
  Not every employee at Tri-State Fabricators is named Vogt, but the family-friendly feel of this shop located outside of Cincinnati, Ohio, makes it seem like everyone is part owner.

“The key to keeping quality employees is to treat them right, be fair with them, show them respect and make them feel important,” says Rick Vogt, company president. “We strive to make sure our employees are told when they do a great job, and we let them know we appreciate all their hard work.”

- Parker Trutec in Urbana, Ohio: Parker Trutec’s jobbing plant has been a very busy place over the last few years. General Manager Geoff Smith and a strong staff have been upgrading and expanding the company’s coatings operations in nearly every area, a step that earned Parker Trutec a Products Finishing Top Shop honor for its technology achievements.

In just the past three years, they installed two new state-of-the-art Bonder tube, zinc and manganese phosphate lines that make use of the latest automated technology to support customer growth, and installed a $1.5 million upgrade to its existing waste treatment system that includes improved treatment technology designed to reduce its waste stream.

- A&A Global Industries in Hunt Valley, Maryland:
  Good coating applications start at the top. A&A Global Industries, no one sets a better example than Lawrence Saad, manager of its Powder Coating division.

With more than 30 years of powder coating experience, Saad is a seasoned veteran who has earned the respect of customers and others in the industry. He is an active consultant for brands such as Mercedes, Subaru, Chrysler, GM, BMW and Sylvania.

- Colourfast Corp. in Concord, Ontario, Canada:
  Joseph Manzoli doesn’t just tell you what Colourfast Corp. in Concord, Ontario, has to offer customers; he also tells you what his Canadian coating shop doesn’t have.

“Shortcuts do not exist,” says Manzoli, the company president. “We have been most intentional about putting quality above all else. We understand that timing of delivery without quality is, in fact, a negative, and never works in the end.”

Colourfast is honored in the Products Finishing Top Shops Benchmarking Survey for its business strategies, which since 2000, have included a quality management system that was designed to critique all aspects of the operation in order to allow the shop to improve its relationship with customers.
Hypertherm Introduces New Class of Plasma with Launch of XPR300 for X-Definition Cutting on Mild Steel, Stainless, and Aluminum

Hypertherm's most significant advance in mechanized plasma cutting ever is making its FABTECH debut. The company's new XPR300 introduces an entirely new class of plasma called X-Definition™.

This new plasma combines engineering advances and refined high definition plasma processes for unmatched plasma cut quality on mild steel, stainless steel, and aluminum. Laboratory testing shows ISO-9013 Range 2 quality on thin mild steel and extended ISO Range 3 cuts on thicker metals. To reach this point engineers developed a number of new patent-pending processes like Vented Water Injection™ (VWI), plasma dampening, and vent-to-shield technologies. The end result is squarer cut edges, markedly less angularity, and excellent surface finish on non-ferrous metals like aluminum and stainless steel.

In addition, new technology makes the XPR300 more efficient than any other plasma system. It cuts faster and uses power more efficiently than earlier systems like the HyPerformance® HPR260XD®. Piercing capability is improved thanks to increased power and an exclusive argon-assist process which enables 30 percent thicker piercing on mild steel and a 20 percent increase on stainless. Additionally, consumable life and cut quality over the life of the consumables get a dramatic boost from advances such as Cool nozzle™ and Arc response technology™. The latter protects consumables from the negative impact of ramp down errors, a regular occurrence in real-life cutting. By reducing this impact, XPR consumables can last up to three times longer than on competitive, older generation systems.

“The arrival of X-Definition Plasma and our new XPR300 is a huge step forward in the capabilities of plasma technology,” said Phil Parker, product marketing manager for Hypertherm XPR Plasma. “The combination of faster cut speeds, unparalleled cut quality, intuitive features, and automatic system monitoring make it our most advanced and productive plasma yet. It really opens up a wide range of opportunities for companies by providing cut quality and consistency that may make it suitable for applications which have previously been associated with laser, but with the much lower initial investment costs associated with plasma.”

Despite being Hypertherm’s most advanced system yet, the XPR300 is easy to use. Sensors in the power supply deliver refined diagnostic codes and significantly enhanced system monitoring information. This reduces troubleshooting time and provides proactive data to improve overall system optimization and uptime. Additionally, the system is designed with fewer consoles and connections so operators can spend less time setting-up and more time cutting. An EasyConnect™ feature allows operators to quickly plug the torch lead into the torch connect console without the use of tools, while a patent pending QuickLock™ electrode delivers easy quarter turn tightening to further reduce setup time. Another new design feature is a quick change torch so operators can rapidly change torches with just one hand. All consoles feature advanced autogas capability allowing operators to select and implement jobs directly from the CNC, along with Wi-Fi in the power supply to enable system monitoring from afar.

Visit any one of the Hypertherm booths A3525, A3531, B17013 to learn more.
DEMO STATIONS.
Get your hands on a variety of machines, like the full fleet of Rebels, including the all-new all-process AC/DC unit capable of MIG, Flux-Cored, Stick, DC TIG, and now AC TIG welding.
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FILLER METAL HUB.
Stop by our interactive filler metal hub where you can chat with our technical experts, sign up to receive a free copy of our latest Filler Metal Data Book, and enter for a chance to win a Sentinel A50 welding helmet.

THE PALEY-JAMES PROJECT.
ESAB is a proud sponsor of the Paley-James Project, a collaboration between sculpture artist Albert Paley and motorcycle builder Jesse James. The final product of their collaboration will be on display at the entrance of the North Hall, so make sure to check it out.

Don’t miss your chance to do all this and more. Get in on the action at booth B17074.
Hurricanes’ Impact on the U.S. Economy
Dr. Chris Kuehl, FMA’s economic analyst and founder of Armada Corporate Intelligence.

Now that Harvey and Irma have entered the lexicon it is time to start the pragmatic assessment. The first priority was obviously to make certain that people were safe and little discussion of economic impact took place – it seemed more than a little churlish to dwell on that subject at the time of crisis. Now that the emergency is over for some it is time to look at the impact on the region and the country as a whole and such an assessment is far from simple or easy.

Natural disasters on this scale have profound negative impacts – that much is patently obvious. What is less obvious is that there will be an economic upside at some point and often fairly soon. Damage estimates are all over the place at this point with a range from $20 billion to $80 billion. It may take months to really know what these storms will cost in terms of lost productivity. There will be second and third order impacts as well. The refineries that were damaged and shut down in Texas produced a great many petrochemicals as well as fuel and there are now shortages of products such as ethylene – a building block for the overall plastics industry. The repair work has begun but in many cases, it is difficult to find the employees that scattered due to evacuation.

In the months to come the rebuilding process will unfold and in largely predictable stages. The destroyed facilities will be repaired and rebuilt with the latest and newest technology and in most cases the repaired facility or home will be better than the one lost. The legions of people that will be engaged in recovery will swell local economies as there will not be enough local people to handle all the work.

The estimate is that Q3 numbers will be down by as much as .05 percent but Q4 numbers could be up by as much as 1.0 percent and that growth will extend into 2018. This is hardly the first time there has been a disaster for a region to recover from and it will not be the last. The phases of recovery will be predictable and the process will be as well. The initial spending on damage will be over by the end of October, the reconstruction will be largely underway or complete by the end of the year, and full recovery for most will occur by the middle of 2018.
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The FABx Tech Talks

Exciting New Format Unveiled at Opening Keynote Presentation

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2001 shows, “Motorcycle Mania I and II,” on the Discovery Channel. In 2004, James starred with Kid Rock in “Motorcycle Mania III.” With the release of these shows, interest in Jesse James and the West Coast Choppers allowed the firm to expand recognition of its brand and therefore its following. James also narrated a 2006 Discovery show called “History of the Chopper,” where he makes his own motorcycle to commemorate the 1960s.

Jacques Panis, President, Shinola

Panis leads Shinola, a Bedrock Manufacturing brand that was conceived with the belief that products should be well made and built to last. As makers of modern watches, bicycles, leather goods, and journals, it builds all of its goods to last. However, of all the things Shinola makes, world-class jobs and an innovative and thriving manufacturing presence in Detroit might be what they’re most proud of.

Karen Kerr, Executive Managing Director, GE Ventures

GE Ventures provides unrivaled access to a global network of GE expertise and resources. They partner and invest in the best ideas within software, health care, energy, and advanced manufacturing. The company’s vision is to scale ideas and grow companies that advance industries and improve lives.

Michael Walton, Industry Solution Executive, Microsoft

Microsoft needs no introduction; within that world-leading organization, Walton stands as one of the most passionate advocates of engendering an innovative culture—and one of the most articulate spokesmen for why it is essential to today’s manufacturing.

Albert Paley
Sculptor

Paley is an American modernist metal sculptor, although he began his career as a jeweler. He has become one of the most distinguished and influential metal smiths in the world. Within each of his works, three foundational elements stay true: the natural environment, the built environment, and the human presence. Paley is the first metal sculptor to have received the Lifetime Achievement Award from the American Institute of Architects.

Common Threads Throughout

While each of the presenters gave his or her unique perspective on the challenges and opportunities faced by American manufacturing today, a number of common threads emerged through the collection of stories.

Each presenter spoke to the human focus: the importance of the workforce, the way it works, thinks and learns, particularly in an age where accelerating technology is changing processes and business models. “We’ve been spending a lot of time thinking about the future of work—from where we sit, what does the manufacturing job of the future look like?” inquired Kerr. “With the advent of the multimodal factory, an inevitable result of more intelligent and ubiquitous connectivity, more flexibility will be required of workers within factories. How do we assure that they achieve this?”

One of the ways GE is meeting this challenge is by augmenting the workforce, both in the factory and field service arenas, with automation and AI tools, as well as augmented reality. “We’ve invested around these areas, and we’re starting to see those tools put to use,” she said.

Walton referenced studies that showed the gap between the needs of manufacturers and the available, qualified personnel that can be hired to meet those needs. He discussed the ongoing challenge for the sector to reshape the perception of manufacturing jobs among a younger demographic.

The need is urgent. According to a study by the Manufacturing Institute and Deloitte Consulting, there will be two million unfilled manufacturing jobs in the future. At the crux of the problem are Millennials, who indicate technology is their most sought-after job, but don’t connect technology and modern manufacturing.

Panis explained that workforce training was critical to Shinola’s success, and used its leather products as an example. A dispersed workforce—those who had worked with leather in the automotive industry—has been leveraged and retrained to have the skill sets necessary for the company’s luxury leather goods business. “So we’ve been able to tap into a resource resident in Detroit, but nonetheless have had to add automation into processes to bring down costs and maintain competitiveness,” he noted. “After all, even though we’re committed locally, the competition is still global.”

The subject of new materials also came up several times. Kerr spoke to GE Ventures’ growing interest in the 3D printing area, noting the company’s “investments in carbon and desktop metal are pushing the boundaries in technology but also in business models.”

Paley referred to the importance of materials in the execution of his art: “My involvement with aesthetics has gone through various phases over the years. In this evolution, the constant has always been my focus on personal awareness and perception. My investigation in form development centers on the exploration of material characteristics, related processes, and technology.”

While all the speakers touched on their future visions, two paid particular tribute to the traditional values that have driven American manufacturing. “We do on a small scale what I believe the country needs to do on a large scale: make things that can be made here,” said Genei. “Skilled trades are at a deficit, and we need to get more people involved in working with their hands.”

He continued: “It’s important to us to celebrate what this country has accomplished in its past, and we celebrate that through re-building old vehicles and what they were—but also in how we act and behave. In the ‘90s, everything became about the stock market, white-collar work, and a different message went out that turned a lot of young people against manufacturing. We had moved away from a work ethic that drove us. There was real skill in that ethic, and at Mobsteel we embrace that. We put our work boots on every day—and it’s very rewarding.”

James echoed that sentiment, noting that despite the celebrity he’s gained, what he’s achieved goes back to doing what he loved, building motorcycles in his mother’s garage. From there he built his shop from the ground up, through nothing more than hard work and dedication, turning it into a phenomenon. Today the West Coast Choppers brand is recognized around the world.

For those who are thinking, well, that’s just motorcycles, it might do well to remember that tiny company that started in an Albuquerque garage in 1975: Microsoft.
Advanced Manufacturing for the Next Industrial Revolution

The title of this column is really a misnomer; the next Industrial Revolution is already here, driven by the rapid advance and proliferation of digital technology and the ubiquitous connectivity it enables. A recent column on the Wired Innovation Insights blog puts it like this:

The biggest change that the manufacturing industry is experiencing right now is the internet of things (IoT). The first industrial revolution was largely powered by steam power and today IoT-centric solutions are powering the fourth industrial revolution.

Sensors are central to IoT solutions in factories, gathering data from machines and delivering them to the right people at the right time. A survey by PwC shows that at least one-third of the manufacturers in the U.S. are embedding sensors in their factories and using the data generated to make their operations more efficient.

According to that survey, 34 percent of manufacturers say that it is critical for American companies to adopt an IoT strategy; 38 percent are embedding sensors in products that allow their end-users and customers to collect sensor data. As a young man born in the blue-collar town of Duluth, Minnesota once sang (a man who is now a Nobel Prize-winning laureate), “The times they are a-changin’.” Changing fast.

Tough Questions from the Moderator

Kota had a specific line of questioning that he related to the nature of FABTECH’s audience, largely comprised of small and mid-sized manufacturers:

“Tough Questions from the Moderator
Kota had a specific line of questioning that he related to the nature of FABTECH’s audience, largely comprised of small and mid-sized manufacturers: unless the small and mid-sized companies that comprise their supply chains are also making that leap, the revolution will never get off the ground. How many small manufacturers can get a 3D model from an OEM and deal with it comprehensively?”

Here Kota cited Siemens and its SCE (Siemens Automation Cooperates with Education) program as a model worth exploring. SCE offers curriculums and automation training based on Massive Open Online Course (MOOC) and blended learning concepts for conveying know-how on Industry 4.0. Educational institutions across the United States can benefit from the special conditions, support, and partnerships provided through the SCE program.

Kota also questioned the efficiency of efforts to date: “When it comes to the nation, we are second to none in entrepreneurship and investment, yet we have deficits in manufacturing and advanced technology products. Why isn’t this trickling down?”

With many venture capitalists finding manufacturing a risk-averse sector, he was particularly keen to hear what Karen Kerr had to say and why GE Ventures was moving to get innovation into manufacturing.

The Panel Speaks

In discussing GE Ventures’ areas of focus, Kerr called out three in particular:

- Workforce empowerment. “We have devoted a lot of time thinking about how to augment our workforce, both in the factory and field service arenas,”

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Today’s focus is on revitalizing U.S. manufacturing — with American goods built by American workers. This defines the New Era of American Manufacturing.

As fabricators develop strategies to meet the demands of this new era, AMADA’s Manufacturing Facility in Brea, California, is building industry-leading automated solutions that set the standards for performance and reliability.
JOIN US TONIGHT!
Industry Night at Soldier Field for Fun and Networking

FABTECH’s Industry Night is the only planned function that takes place after show hours. It’s a wonderful opportunity to bring the industry together in a fun, relaxed environment, enjoy some great food and drinks, and network among old and new friends in one of Chicago’s signature landmarks.

What: Industry Night
When: Tonight, Nov. 7, 5:30-7:30 PM
Where: Soldier Field
Why: You Deserve It!
The Bears won’t be on the field tonight, but you’ll have the opportunity to get down on the grass; what’s more, NFL Hall-of-Famer Dan Hampton, “the Danimal,” will be there for autographs and conversation. Inducted into the Pro Football Hall of Fame in 2002, Hampton was a dominating presence as a defensive tackle for the Chicago Bears from 1979 to 1990. He was selected to four Pro Bowls and was a member of the team that defeated the New England Patriots in Super Bowl XX.

Soldier Field was designed in 1919 and opened on October 9, 1924, as Municipal Grant Park Stadium. The name was changed to Soldier Field on November 11, 1925, as a memorial to U.S. soldiers who had died in combat. Its neoclassical design style features Doric columns rising above the east and west entrances. The stadium cost $13 million to construct ($182 million in 2015 dollars), a huge sum for a sporting venue at that time.

General admission tickets to the event are $50. VIP tickets are $75, an upgrade that provides a behind-the-scenes tour that includes access to the visitor’s locker room, where Bears opponents gear up before game time, and a visit to the field where all the action happens. VIP’s will also have the chance to win a football autographed by Hampton.

For those who do not have advanced tickets, you can go to Registration to check availability.

We look forward to seeing you at Soldier Field tonight!
## Education Program

**TUESDAY, NOVEMBER 7**

<table>
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<tr>
<th>TECHNOLOGY</th>
<th>8:00 AM – 10:00 AM</th>
<th>10:30 AM – 12:30 PM</th>
<th>1:30 PM – 3:30 PM</th>
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<tr>
<td><strong>3D/ADITIVE MANUFACTURING</strong></td>
<td>F40: NEW Business Considerations for 3D Additive Technology with Tech Tour Room 402A</td>
<td>F50: NEW Design Considerations for 3D Additive Technology Room 402A</td>
<td>F60: NEW Considerations for Small to Large Additive 3D Printing Room 402A</td>
</tr>
<tr>
<td><strong>AUTOMATION/SMART MFG</strong></td>
<td>F47: NEW Automating with Laser Technology Room 401A</td>
<td>F57: NEW Introduction to Smart Manufacturing and Asset Optimization in Real-Time Room 401A</td>
<td>F67: NEW Robot-Based Automation Systems Room 401A</td>
</tr>
<tr>
<td><strong>FINISHING</strong></td>
<td>C40: NEW Fundamentals of Pretreatment Room 404D</td>
<td>C50: NEW Finishing End Use Case Histories Room 404D</td>
<td>F61: Waterjet Cutting Solutions for Quality Cut and Speed Room 404A</td>
</tr>
<tr>
<td><strong>FORMING &amp; FABRICATING</strong></td>
<td>C41: NEW Plating and Anodizing Industry Success Stories Room 405A</td>
<td>C51: NEW Mejorando el Desempeño Total Del Sistema de Pintura en Polvo Room 405A</td>
<td>F62: NEW Optimizing Liquid Finishes Room 405B</td>
</tr>
<tr>
<td><strong>JOB SHOP</strong></td>
<td>F48: Tube Producing and Joining Room 502A</td>
<td>F58: Advanced Roll Forming Tooling and Line Troubleshooting Room 502A</td>
<td>F68: Press Brake Tooling Room 502A</td>
</tr>
<tr>
<td><strong>LASERS</strong></td>
<td>F49: Advanced Punching Capabilities for Fabricators Room 502B</td>
<td>F59: Advanced Press Brake Technology Room 502B</td>
<td>F69: Steel 101: Mill to Fabricator Room 502B</td>
</tr>
<tr>
<td><strong>MANAGEMENT</strong></td>
<td>F60: NEW Leadership Actions to Transform Your Culture and Create Employee Engagement Room 404BC</td>
<td>F56: NEW Lean Manufacturing Journey Through the Job Shop Room 401D</td>
<td>F66: NEW Leverage Real-Time Costs and Double Output Room 401D</td>
</tr>
<tr>
<td><strong>STAMPING</strong></td>
<td>F44: Lean: Value Stream Mapping, Addressing Differences Between Office and Shop Floor Room 401B</td>
<td>F54: NEW Accelerate Profitability Through Cost Reduction Strategies Room 403A</td>
<td>F64: Lean Tools: Quick Changeover and Total Production Maintenance (TPM) Room 401B</td>
</tr>
<tr>
<td><strong>STRUCTURAL STEEL/PLATE</strong></td>
<td>F45: NEW Global Landscapes and Cultural Awareness for Competitive Advantage Room 403A</td>
<td>F55: NEW Accelerate Profitability Through Cost Reduction Strategies Room 403A</td>
<td>F65: NEW Innovative Strategies for Leading, Protecting and Growing Your Organization Room 403A</td>
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### WELDING

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<thead>
<tr>
<th>SEMINARS</th>
<th>W12: Crash Course of Welding Inspection Technology Seminar (WIT), Room N128</th>
<th>8:30 AM – 9:30 AM</th>
<th>9:30 AM – 10:30 AM</th>
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<tbody>
<tr>
<td>CONFERENCES</td>
<td>W13: The Why and How of Welding Procedure Specifications - Beginner, Room N129</td>
<td>8:00 AM – 9:00 AM</td>
<td>9:00 AM – 10:00 AM</td>
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<tr>
<td>PROFESSIONAL PROGRAM</td>
<td>W14: The Why and How of Welding Procedure Specifications - Advanced, Room N129</td>
<td>1:00 PM – 2:00 PM</td>
<td>2:00 PM – 3:00 PM</td>
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<tr>
<td></td>
<td>W15: The Why and How of Welding Procedure Specifications - Both, Room N129</td>
<td>8:00 AM – 9:00 PM</td>
<td>9:00 AM – 10:00 PM</td>
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<tr>
<td></td>
<td>W16: Applications of Stainless Steel Welding - Day 1, Room N131</td>
<td>8:30 AM – 9:30 AM</td>
<td>9:30 AM – 10:30 AM</td>
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<tr>
<td></td>
<td>W17: ASME Section IX, B31.1 &amp; B31.3 Code Clinic - Day 1, Room N133</td>
<td>8:30 AM – 9:30 AM</td>
<td>9:30 AM – 10:30 AM</td>
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<tr>
<td>SPECIAL PROGRAMS</td>
<td>W24: Tubular Structures Conference, Room N226</td>
<td>8:00 AM – 9:00 AM</td>
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<tr>
<td>RWMA SCHOOL</td>
<td>W26: RWMA Resistance Welding School - Day 1, Room N227A</td>
<td>8:00 AM – 9:00 AM</td>
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<tr>
<td>PROFESSIONAL PROGRAM</td>
<td>W28: Session 4: Arc Welding, Room N138</td>
<td>8:00 AM – 9:00 AM</td>
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<td></td>
<td>Session 5: Welding Metallurgy &amp; Weldability, Room N139</td>
<td>8:00 AM – 9:00 AM</td>
<td>9:00 AM – 10:00 AM</td>
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<tr>
<td></td>
<td>Session 6: Honorary Symposium for Dr. S. David and Prof. T. DebRoy - Joint Session A, Room N140</td>
<td>8:00 AM – 9:00 AM</td>
<td>9:00 AM – 10:00 AM</td>
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<tr>
<td></td>
<td>Session 7: Industrial Technologies, Room N138</td>
<td>8:00 AM – 9:00 AM</td>
<td>9:00 AM – 10:00 AM</td>
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<tr>
<td></td>
<td>Session 8: Honorary Symposium for Dr. S. David - Session B, Room N139</td>
<td>8:00 AM – 9:00 AM</td>
<td>9:00 AM – 10:00 AM</td>
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<td></td>
<td>Session 9: Honorary Symposium for Prof. T. DebRoy - Session B, Room N140</td>
<td>8:00 AM – 9:00 AM</td>
<td>9:00 AM – 10:00 AM</td>
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<tr>
<td>EDUCATIONAL SESSIONS</td>
<td>W34: AWS Education Sessions, Room N137</td>
<td>8:30 AM – 9:30 AM</td>
<td>9:30 AM – 10:30 AM</td>
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<tr>
<td>SPECIAL PROGRAMS</td>
<td>W36: AWS Awards Luncheon, Room N228</td>
<td>8:30 AM – 9:30 AM</td>
<td>9:30 AM – 10:30 AM</td>
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</table>

* Schedule subject to change.
The Steel Story

Dr. Chris Kuehl, FMA’s economic analyst and founder of Armada Corporate Intelligence.

The plan was to release the details of the steel tariff plan at the end of June. As of mid-August the plan was still not in place. As expected, this complex issue is not easily resolved, and in the last several months there have been comments from a variety of affected industries. The plain fact is that there are far more consumers of steel than there are producers, and they have all been making their opinions known.

The motivation for the tariffs is a belated attempt to rescue the domestic steel business. Over the last few decades, the U.S. steel industry has been fading and steel consumers have been buying cheaper imported steel. Even if the foreign steel was not always cheaper, it was available, and the U.S. producers could not always keep pace. The case for the steel tariff has been made around national security as the U.S. doesn’t want to be dependent on foreign sources. Given that most of the steel coming into the U.S. is from allies such as Canada, Mexico, and Japan, this is a weak argument.

What is likely to happen now? It would be an embarrassment to abandon the whole effort, and Trump seems unwilling to take that step. Those that do not want to see major shortages of steel and price hikes are pushing hard for exemptions, and they have gotten some already. The steel-using sectors are making their case aggressively and suggesting they will lose jobs. The best estimate is that a final decision will not come for months, and the end result will be far less comprehensive than was originally outlined, with perhaps a sliding scale of tariffs.

Meanwhile, there are discussions regarding what the steel sector in the U.S. really needs in order to be competitive in the future. The strict environmental rules that prohibit scrapping of ships in the U.S. would be a good place to start, as most of the U.S.’s current ship work is done in other nations, such as China. That has included the scrapping of U.S. warships.
We added an M-502 Super Cooling Fan and it has been keeping our techs comfortable during these hot days. We even tested it with one of our expensive infrared temperature guns and it passed the test.
- Cody Hofer - Stotz Equipment

Booth: A4092
Hall A, Forming & Fabricating Pavilion

Variable speed portable evaporative super cooling fans can be used in large work areas — including dusty, dirty environments, such as maintenance shops, large patios and decks. They are useful in places where air conditioners are not effective, and they have the added benefit of cleaning and filtering out dust along with cooling the temperature.

<table>
<thead>
<tr>
<th>M-502 FRP</th>
<th>M-602 Cool</th>
<th>M-702 Cool</th>
<th>M-702 Cool</th>
<th>M-802 Cool</th>
<th>M-902 Cool</th>
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<tr>
<td>65-75 dB</td>
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### Specifications

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<th>Feature</th>
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<tr>
<td><strong>External Frame</strong></td>
<td>FRP, PE</td>
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<tr>
<td><strong>Blade Size</strong></td>
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<tr>
<td><strong>No. of Blades</strong></td>
<td>6 (Nylon 86+ Fiber Blades), 6 (Nylon Blades)</td>
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<tr>
<td><strong>Motor Power</strong></td>
<td>1 HP, 1.5 HP, 1.5 HP, 1.5 HP, 0.5 HP, 0.5 HP</td>
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<tr>
<td><strong>Inverter</strong></td>
<td>2 HP, 2 HP, 1 HP, 1.5 HP</td>
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<td><strong>Cools Up To</strong></td>
<td>N/A, 4000 SQ FT, 3700 SQ FT, 3100 SQ FT, 2500 SQ FT, 1291 SQ FT</td>
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<tr>
<td><strong>Capacity Gallons</strong></td>
<td>N/A, 47 Gallons, 38 Gallons, 33 Gallons, 32 Gallons, 14 Gallons</td>
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<tr>
<td><strong>Volt</strong></td>
<td>230 Volt 1-Phase, 230 Volt 1-Phase, 115 Volt 1-Phase, 115 Volt 1-Phase, 220 Volt 1-Phase, 115 Volt 1-Phase</td>
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<td><strong>Size</strong></td>
<td>61&quot; H x 46.66&quot; L x 35.63&quot; W, 73.22&quot; H x 61&quot; L x 31.85&quot; W, 67.71&quot; H x 52&quot; L x 27&quot; W, 62.20&quot; H x 49.60&quot; L x 28.34&quot; W, 54.33&quot; H x 38.56&quot; L x 26.77&quot; W, 51&quot; H x 23&quot; L x 16.68&quot; W</td>
</tr>
<tr>
<td><strong>Dry Weight</strong></td>
<td>243 lbs, 265 lbs, 220 lbs, 200 lbs, 165 lbs, 99 lbs</td>
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</table>

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Advanced Manufacturing for the Next Industrial Revolution  

she said. The company has invested in automation, artificial intelligence (AI), and augmented reality (AR) tools, and is already seeing these deployed to good effect.

• **Increased visibility.** "Supply chain visibility end-to-end and having the ability to leverage connectivity between suppliers, carriers, warehouses and factories are important capabilities to invest in. We do this to drive cost out, but also to provide a better customer experience in terms of quality of product and on-time delivery."

• **3D/Additive Manufacturing.** "We have made significant investments in carbon and desktop metal, pushing boundaries on technology but also business models." All these areas relate to the idea of connectivity: getting feedback on manufacturing processes, and leveraging that for insight to innovate new products. "Manufacturers have always had a sense of connecting things, but I think it’s reached a ‘hockey stick’ effect where they have the ability to leap forward exponentially," said Plex’s Foster.

In addition to the development of the industrial IoT, Foster points to the cloud as a critical piece of infrastructure, even if it’s become so much of modus operandi that we don’t think of it as advanced. "The cloud is critical to most of the other technologies. Connectivity, big data, cheap storage are all integral to the IIoT; but the decrease in the cost of storage has really opened the flow of data. That is directly related to the cloud. This combination of factors is allowing manufacturers to get at the heart of their processes like never before."

"Not enough has been said about the workforce," continued Foster. "Manufacturers need a workforce that is comfortable with and seek engagement with technology, do not associate technology with manufacturing. Like GE Ventures, Plex is supporting workforce development with investments in tools such as augmented reality and wearable devices. "We’ve had some real success with Google Glasses and audio navigation. While voice recognition has been around for some time, the exciting recent advancements have been about weeding out surrounding noise, so often critical in factory environments."

Something Plex is looking at, but hasn’t yet implemented: use of drones on the factory floor. Since 3D printing has developed quite dramatically, don’t be surprised to see drone technology follow in those footsteps.

**Start Small, Move Fast, Think Big**

In response to Kota’s query of how to drive this new technology down into the critical small and mid-sized part of manufacturing’s base, Microsoft’s Walton was passionate in repeating a mantra: Start small. Move fast. Think big.

"These organizations can’t implement digital transformation overnight," he explained. "They must start with a vision. Take small steps. Then move fast and get muscle memory through that process. Once they have that, they can scale. That’s how all the best organizations do it, from visionary IT companies to smaller fabricators."

Walton posed some questions of his own: "Why is innovation important to this industry? Why is it important to share ideas and not penalize employees for creativity? What are the penalties if your organization fails to innovate?"

Walton contended that it is key for manufacturers to create a “culture of innovation,” meaning having the willingness to innovate, not penalizing (or fearing) innovative thought or action, and being able to learn from failures to drive future success. "I have the utmost respect for FABTECH," he says. "Most of the attendees here work for companies with limited marketing budgets. Here’s one thing that they or anyone can do regardless of size or capital resources: allocate 20 percent of your time to innovative thinking. It’s not easy, but it’s highly effective. You can’t sustain a culture of innovation unless you apply it yourself."

Walton closed with an anecdote about a colleague from another industry who had been hit hard by a raft of financial pressures. "He applied this method to himself and his team, and after three years, his team was the only one across the enterprise that didn’t have a cut in personnel. Why? They’d developed a culture of innovation. They’d found new ways to have greater impact and realize cost savings."

The American futurist Stewart Brand once observed, "Once a new technology rolls over you, if you’re not part of the steamroller, you’re part of the road." For small and mid-sized manufacturers dealing with the disruptive technologies of the new industrial revolution, having an innovative culture will keep them from getting flattened.
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Stop by booth B17074 today to experience them for yourself, and explore the whole Rebel family at esab.com/rebel.
Introducing TRIMAX, The Worlds’ Safest, Most Innovative Split-Frame Lathe

Tri Tools’ exciting new split-frame machining system has been designed to deliver unprecedented performance & dependability, combined with industry-leading operator safety at it’s very core.

“A remarkable achievement. This state-of-the-art bearing design is a game-changer and makes all competing machines obsolete in terms of safety, stability and outstanding cutting results.”

Having pioneered countless variations, configurations and special engineered versions of the split frame lathe, Tri-Tool became keenly aware of the fact that the true nature of the “Clamshell” lathe was not simply a machine that could be split and mounted in-line along a pipe. TRIMAX’s real advantage is that it is an ideal platform for limitless machining operations.

Many years as an OEM providing high quality, world-class portable machining solutions has resulted in a vast body of experience, as well as the excellent opportunity to learn our customers’ needs and expectations from its many tools.

When developing a new machining system intended to raise the bar for this class of machine, it was crucial to re-imagine its products that had served so many, so well for such a long time. By applying their vast experience in machine tool design with advanced CAD and manufacturing capabilities, their engineering team was able to produce the ultimate split-frame lathes on the market today.

The advantages of TRIMAX are crystal clear.
- The industry’s first “Zero Pinch Point” OD mounted split-frame pipe lathe
- Revolutionary, patented high-speed ball bearing system
- Faster cutting speed, better surface finishes, and longer bit life
- Rigid, high-stability frame for unlimited machining applications and accessories

Internalizing the conventional drive, feed, and mounting components eliminated pinch points making the TRIMAX ideal for operation in close, confined spaces.

The TRIMAX system is indicative of our ongoing commitment to our SAFER BY DESIGN™ concept, to produce increased operator safety through intelligent design.

This design advantage is one of many offered by the new system wherein the increased “L Shaped” headstock stability and low friction of the innovative recirculating ball bearing patent offer much greater system expansion than ever before.

Greater system options translate to enhanced versatility and customization possibilities, and that in turn results in maximum economy and functionality for years to come.

Tri Tool encourages customers to challenge them with any operational requirement, from the simplest to the most demanding (or previously impossible) portable machining requirement.

With two patents, the TRIMAX machining system was built to be the safest, most stable split frame lathe on the market today. With the tripper mechanism being housed internally, there are no pinch points on this revolutionary new machine. The unique recirculating ball bearing also makes the system rigid both axially and radially providing the strength needed for fast, safe form tooling on heavy wall pipe. Currently there are no competitors in the market space that can do what this new machine can.

The vastly improved rigidity and capacity to accept much larger cutting loads and forces without adversely affecting performance maximizes the special accessory configuration extensibility of the TRIMAX machining system.

Stop by Tri Tool’s Booth #B33013 to see this remarkable game changing clamshell and discuss cost effective solutions possible for demanding applications.
Fives, custom engineered machines for production of seamless and welded tubes

OTO & Abbey tube mills

OTO and Abbey electric resistance welding tube mills dedicated to the production of ERW tubes with a diameter range from 4mm to 914mm and wall thickness from 0.4mm to 25mm.

OTO & Abbey cut-offs

OTO and Abbey cut-off systems for small, medium and large size round tubes and profiles, including a new high-speed model with maximum cutting quality.

Bronx straighteners

Bronx heavy duty straightening machines with minimized set-up time, improved accuracy without surface blemishes, enhanced rigidity and consistent straightness / roundness.

Taylor-Wilson packaging system

The Taylor-Wilson packaging system to accommodate a multitude of variables, with three styles of machine to process tubes from 12 to 219mm with lengths of 3 to 12 meters.
A Metal-AM Industry Expert Peers Toward the Future

Brad Kuvín, Publisher and Editorial Director, 3D Metal Printing Magazine

The overriding trend among users of 3D metal-printing technology, particularly those in regulated industries such as medical and aerospace: use of “smart-manufacturing” technology based on sensors, data analytics and software applications to manage process flow, track and optimize product quality, and minimize machine downtime to optimize OEE. So notes EOS director of global application and consulting Gungor Kara, in an interview with 3D Metal Printing. In his look ahead at 2017, Kara takes a deep dive into the trends driving metal additive manufacturing (AM) forward.

Kara has spent the last 30 months leading the EOS global application teams, working with engineers as they help customers ramp up their development cycles, including selection of parts and redesigning them for AM, and process qualification.

3DMP—How does the digitization of manufacturing and Industry 4.0 initiatives impact the metal-AM market?

Kara—There is a jetstream driving all of manufacturing forward at an accelerating pace, based on the growing use of sensors, machine-to-machine communication and data analytics. We see it everywhere and it’s pulling in AM. While this technology utilizes connected hardware devices, it’s the software applications that really dominate the landscape. Companies with several 3D metal printers, for example, can monitor their use and develop sophisticated ROI models based on the data they can pull from the machines. Further, customers can upload their part designs, and receive immediate cost quotes based on embedded cost models. These applications are bringing transparency to the AM industry—I call this “agile transparency,” where we’re not looking back at what has occurred in the past, but instead looking ahead with the ability to make intelligent decisions about where and when to print parts. There also are software applications helping manufacturers overcome hurdles related to intellectual property. STL files can be encrypted, for example, so that the files only can be read by specific, defined 3D printers. And, the designer can designate how many times a part can be printed. These and other solutions will make metal AM more appealing in a short amount of time.

3DMP—Please explain how digitization and the use of sensors and “smart manufacturing” help support automation in the metal-AM industry.

Kara—This is an interesting and exciting topic—much has happened in this area. We see a significant increase in the development of automation driven by the escalation in the use of sensors. AM-machine builders are adopting this technology very quickly. It’s driven primarily by two factors—the need to improve product quality (and track and trace build results), and the desire to increase machine utilization. For example, with the aim of minimizing machine downtime, AM-machine controls now can send SMS text messages to operators. Such a message might, for example, alert the operator that a build is nearly complete, and that he should prepare to open the process chamber, remove the part and prepare the machine for the next build. The goal is to minimize changeover time.

This technology will become much more prevalent in the coming months, as platform solutions become available. This will result in the simultaneous management of software applications, sensors, data analytics and process flow.

3DMP—How is the industry, and specifically EOS, preparing to educate engineers and others on metal-AM technology, in light of all of this ongoing innovation and rapid increase in use?

Kara—Companies using metal AM now are realizing that merely hiring recent engineering graduates, who have studied AM in college, is not sufficient. They must train their current, experienced engineers in metal-AM technology, from design for AM to post-processing techniques. And then, these trained engineers must be capable of going back to their companies and imparting what they have learned to the rest of their team.

The key areas of training that we see as the focus in 2017 and beyond are understanding design complexity, part consolidation and lightweighting; how to design for post-processing; and optimization of process parameters. One of the goals also must be to move engineers away from the machines and let machine operators take over day-to-day tasks of machine setup and machine tending. This will happen as we educate engineers on process...
development and evaluation—steering them away from using the machines for physical trial-and-error tasks and instead performing what I call an “intellectual trial and error process.”

At EOS, we have for the last two years developed a training partnership with two European universities—the University of Wolverhampton, in West Midlands, UK, and Germany’s SRH Hochschule Berlin—to help us develop a comprehensive program combining hands-on training and classroom instruction. We’ve already begun to use the program to train our own employees, and will offer the program to customers later this year. Metal-AM training at Wolverhampton addresses design, process optimization and material qualification; training at SRH focuses on driving innovation throughout the company culture.

So, with this training engineers not only learn 3D metal printing from start to finish, but they also learn how to move this innovative technology into their companies. They come away with an understanding of how to communicate with engineers at their companies and preach the benefits of AM. They learn how to calculate ROI, and we provide case studies on how to run innovative workshops within their companies, and how to pull together interdisciplinary teams—people from quality, production, supply chain, R&D, etc.—and drive innovation.

Mitsubishi showcases their latest Fiber machine, the SR-F model, available in 2 and 3KW. This entry level machine offers the superior advantageous of a Mitsubishi Laser in an economical package. Standard Features include Motion Cut, Eco Mode, Auto Focusing, Mitsubishi’s High Speed Control and our exclusive Remote 360 Application. The SR-F is the newest in the most complete FIBER laser line up available in the industry. This line up includes, eX-F Zoom Fiber, rX-F Zoom Fiber. XL-F Zoom Fiber, and our eX-F standard Fiber. Stop by booth A2619 to learn more and see all of the Mitsubishi products in action.

**Mitsubishi SR-F Model, Superior Laser in an Economical Package**

Mitsubishi showcases their latest Fiber machine, the SR-F model, available in 2 and 3KW. This entry level machine offers the superior advantageous of a Mitsubishi Laser in an economical package. Standard Features include Motion Cut, Eco Mode, Auto Focusing, Mitsubishi’s High Speed Control and our exclusive Remote 360 Application. The SR-F is the newest in the most complete FIBER laser line up available in the industry. This line up includes, eX-F Zoom Fiber, rX-F Zoom Fiber. XL-F Zoom Fiber, and our eX-F standard Fiber. Stop by booth A2619 to learn more and see all of the Mitsubishi products in action.

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NAFTA Debate Underway
Dr. Chris Kuehl, FMA's economic analyst and founder of Armada Corporate Intelligence.

About the only thing accomplished in the first round of talks over NAFTA is that everybody now seems to know how tough this is going to be. One would be hard pressed to find common ground among the participants, and now the focus is on determining whether any of these positions are real or just early stage posturing to appeal to specific constituents.

What makes these discussions even more unpredictable is that two of the three leaders have significant political issues to deal with at home. The elections in Mexico are not that far away, and the candidates are making their positions known. The threat to the PRI (currently the party in charge with Enrique Pena Nieto as president) is AMLO—Andres Manuel Lopez Portillo. He is the former mayor of Mexico City and a fiery leftist who has made much of the Trump hostility toward Mexico. Anything that appears to be giving in to Trump's demands will be a boost for AMLO and his hardline position.

Trump also must worry about his base. The events in the White House that led to Steve Bannon's firing threaten to alienate many of those who have been ardent supporters, and giving in on NAFTA will only further distress this voting bloc.

As expected, the focus of the talks has been manufacturing. The U.S. has been watching a great deal of manufacturing capacity shift to Mexico over the years—especially as far as the auto sector is concerned. The U.S. automakers have been trying to bring their parts and assembly costs down, and they have chosen to rely on Mexico more.

The U.S. has opened these talks with demands that both Canada and Mexico have rejected out of hand. The content rules put forward by the U.S. have been rejected by the automakers themselves, and they assert that the suggested rules would make them uncompetitive—even against imported cars. The U.S. business community as a whole has taken a dim view of the U.S. position, as it would severely limit trade. There are far more jobs dependent on imports from Mexico than would be preserved or added by these new rules and regulations—that is the position thus far from most of the business organizations that have weighed in.

As is so often the case, the effort to hold on to U.S. manufacturing in 2017 is a case of too little and too late. Most of those manufacturers that were seeking lower production costs have already left the U.S., and they will not be bringing jobs back to the U.S. even if they elect to return capacity. The manufacturers that are returning to the U.S. are often able to do so because of technology and robotics. This is great for the U.S. manufacturing GDP, but it does little to add jobs. The fear is that political motivations will overtake economic ones and NAFTA will be severely crippled. This would mean that other nations in the world would gain a competitive edge over those in North America, and that would be bad for the U.S. as well as Mexico and Canada. The more realistic search should be geared toward finding new job opportunities for those who have been displaced by either advancing technology or foreign competition.

The talks will continue from here, and there are rounds scheduled for Mexico and Canada with a conclusion hoped for early next year. That puts the discussions smack in the middle of the 2018 elections in the U.S., and that will be a major factor alongside the impending vote in Mexico.

Making Apprenticeships a Part of Your "Skills Gap" Solution

standard with a competency-based approach, tracking the related training instruction (RTI) that is required for apprenticeship education as well as the demonstrated OJT skills a worker should perform over the years of his or her development.

Apprenticeships pairing of OJT hours with classroom and online instruction supply a talent pipeline of qualified workers for employers and industries. Employees benefit as well, as these apprentices get paid while gaining the training needed for the skilled positions that will launch them on a promising and lucrative career path. As a result, they gain a debt-free education when compared to many of their counterparts pursing two-year and four-year college degrees.

Now, educators and employers can identify the specific skills, experience and technical knowledge required to succeed in today’s advanced workplace environments through competency-based learning models such as Tooling U-SME’s Apprenticeship Acceleration Framework.

By defining specific knowledge and skill requirements that align with standard apprenticeship job functions, these frameworks allow the development of an industry-wide standard of program design, implementation and management.

You must do something
To attract and retain new talent, manufacturers must commit to establishing tried and true training programs that will produce highly-skilled employees and drive competitiveness, productivity, quality, innovation and profitability. And apprenticeships can be part of the answer.

Cox Manufacturing, a 60-year old San Antonio maker of precision cut metal components, is one manufacturer seeing strong results from its apprenticeship program.

“The biggest advantage for a company is related to culture and retention,” said Sean Althaus, the company’s training coordinator. “Turnover has been on a downward trend the last two years. It’s an investment in the future.”

Cox implemented a competency-based registered apprenticeship program, certified by the Department of Labor.

What’s your move?
Regardless of whether an organization is large, medium or small, most—if not all—manufacturers can benefit from establishing ongoing learning and development programs, such as apprenticeships, to prepare their workforce. Planning will take time and money, but the payoff will be well worth the investment.

As we head into National Apprenticeship Week, Nov. 13-19, consider the proficiency of your workforce to determine whether an apprenticeship model is the right training option for you.

If you want to learn more about establishing a tried and true apprenticeship program at your company, visit our Tooling U-SME team during the FABTECH show at booth # A3558 or visit toolingu.com.
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Mazak Optonics Corp. Introduces OptiPlex 4020 Fiber III 8kW

Mazak Optonics Corp. will be showing their new OPTIPLEX 4020 Fiber III 8kW laser-cutting system in booth #A4001. The new OPTIPLEX Fiber III 8kW utilizes a new PreviewG Control and higher performance digital drive package.

The OPTIPLEX 4020 Fiber III utilizes a new drive system which 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 PreviewG Control is a large 19" LCD touch screen which operates similar to a smart phone or tablet for increased ease of operation.

Designed to integrate Intelligent Setup and Monitoring Functions, the OPTIPLEX 4020 Fiber III delivers features normally available only on the highest technology machines. These features simplify operation and reduce operator dependency. The OPTIPLEX 4020 Fiber III has been engineered to be utilized with Mazak’s extensive range of automated material handling systems. A 2 pallet changer design with a helical rack and pinion positioning system that features high through-put and rugged construction delivers a combination of performance and value.

The OPTIPLEX 4020 Fiber III is equipped with sensors in the Multi-Function Torch that monitor piercing and cutting operations to improve throughput and part quality. If an anomaly is detected, the operation is adjusted or paused to automatically achieve effective cutting conditions.

For more information on any of Mazak Optonics Corp.’s laser-cutting line visit booth # A4001.

Mazak Optonics Corporation is a major supplier of laser-cutting systems, offering 50 laser models and leading the industry in the implementation of emerging laser technologies. The company’s 50,000 sq. ft. North American Headquarters are located in Elgin, Illinois, and feature a 30,000 sq. ft. laser technology center housing up to 18 machines for demonstrations and training. Mazak Optonics is part of Yamazaki Mazak Corporation (Oguchi, Japan), the global leader for the manufacture of machine tools and systems for the precision machining of metal parts, including CNC turning centers, horizontal and vertical machining centers, Multi-Tasking machining centers, turnkey cells and software solutions. The North American Headquarters for Yamazaki Mazak are located in Florence, Kentucky.
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**BOOTH #A4001**

FABTECH

[www.mazakoptonics.com](http://www.mazakoptonics.com)