TODAY’S EVENTS

Women of FABTECH Breakfast
7:45 AM – 10:00 AM
Room S103

Keynote: Grant Imahara, Former Host on Discovery’s “Mythbusters” and Animatronics Engineering Expert
8:30 AM – 9:30 AM
Lakeside Center Ballroom

Grant Imahara Meet/Greet
9:45 AM – 10:30 AM
Lakeside Center Ballroom

Leadership Exchange: The Impact of Disruptive Technology and the Future of Manufacturing
12:30 PM – 1:30 PM
Lakeside Center Ballroom

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)

Scam Me if You Can

The Tuesday crowd at FABTECH was treated to an engaging and funny keynote by legendary former con man Frank Abagnale. A former professional impostor and the author of the bestselling memoir, Catch Me If You Can, as well as The Art of the Steal and Stealing Your Life, Abagnale is one of the world’s most respected authorities on the subjects of fraud, forgery, and cyber security.

Scammers and con-artists steal billions of dollars from unsuspecting Americans every year. “Modern technology that has been developed to protect us,” said Abagnale, “has only made it easier for scammers to steal victims’ money, information, or even their lives.” From identity theft to scam phone calls and insurance fraud, con artists are always out there, waiting for the right moment to commit their crimes.

In today’s world, its cybersecurity that is currently grabbing all the headlines. Instead of letting victims off the hook due to their unfamiliarity with technology, Abagnale placed the responsibility for any incidents where it rightly belongs.

“Every breach occurs because someone in a company did something they weren’t supposed to do, or someone failed to do something they were supposed to do,” he said. “Hackers do not cause breaches.”

Trusted by the FBI for more than four decades, Abagnale has lectured frequently at the FBI’s Academy and at field offices. He has become a hero to hundreds of public and private sector organizations for his counsel and strategic insight on safeguarding information systems and for combating cyber-fraud. More than 14,000 financial institutions, corporations, and law enforcement agencies use his fraud prevention programs to safeguard their financial, intellectual property, and physical assets. He consults with major corporate clients such as Experian, Intuit, and LexisNexis, as well as serving as AARP’s Fraud Watch Network Ambassador.

Abagnale’s FABTECH presentation kept the audience on the edge of their seats. He retold the story of his transformation from one of the world’s more notorious con-artists to international cybersecurity expert. In that role, he offered plenty of advice to manufacturers.

“Every scam, no matter how sophisticated or amateur, they all require the scam artist to raise two red flags,” said Abagnale. “At some point they are going to ask you for money, and you must give it to them immediately (provide a Walmart Green Dot card, wire me the money, use Apple Pay, give me your credit card number, etc.) or they are going to ask you for personal information (date of birth, SSN, bank account number, etc.). Without these two red flags that everyone should know, the scam cannot be successful.”

The seminar provided a brief introduction to material in Abagnale’s latest book, Scam Me If You Can: Simple Strategies to Outsmart Today’s Ripoff Artists (Portfolio/Penguin Random House-AARP). Frank brought the crowd up-to-date on all aspects of cyber fraud, identity theft, data breaches, medical identity theft, social media, and the means used by cyber criminals to obtain identities and other confidential information from businesses and individuals. He discussed the importance of comprehensive identity management for companies, corporations, financial institutions, small businesses, and people in general.

Immortalized on Film

For many, Abagnale is the first call in the event of any scam. His on-target and insightful advice armed the FABTECH audience with many simple ways they could protect continued on p. 26
Mazak leads the way with power and performance. See the power of OPTIPLEX 10kW laser-cutting technology. Direct diode performance will be demonstrated in an automated sorting system. Contact your Mazak representative to learn more or visit www.mazakoptonics.com.
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Save the dates for future FABTECH events!

FABTECH’s marketing-leading events take place at different times of the year and in different locations across North America.

**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
Innovation Drives Success

Experience Innovation
at Booth A2122

Presenting high-performance solutions that are driving fabricators to new levels of productivity, profitability, and success.
ESAB Experience Features Hands-On Live Arc Demos

ESAB offers a premiere hands-on welding, cutting and educational experience in Booth B17087.

Welding Opportunities
ESAB has redefined rugged portability with its Robust Feed Pro wire feeder. The shop version ESAB has redefined rugged portability with its Welding Opportunities Booth B17087.

ESAB Experience Features Hands-On Live Arc Demos
ESAB’s new DMX SmartCorner™ technology uses 3D interpolated bevel motion to cut outside beveled corners without a corner loop and cut inside beveled corners without rounding the edges. For cutting pipe in diameters from 50 to 300 mm alongside a cutting table for flat plate, explore ESAB’s new SmartPipe™ cutting system.

Cutting Opportunities
ESAB’s new DMX SmartCorner™ technology uses 3D interpolated bevel motion to cut outside beveled corners without a corner loop and cut inside beveled corners without rounding the edges. For cutting pipe in diameters from 50 to 300 mm alongside a cutting table for flat plate, explore ESAB’s new SmartPipe™ cutting system.

For the industry’s leading combination of performance, reliability and value, check out the iCNC Performance controller from Thermal Dynamics® Automation, and enter to win an automation upgrade valued at $20,000 at thermal-dynamics.com.

Thermal Dynamics will preview the next-generation Cutmaster® 40 platform, a 115V-230V multi-voltage unit that weighs 23 lbs. and delivers a 50-amp, 50 percent duty cycle output on 230V primary. For cutting up to 60 percent longer before changing electrodes, use the new Cutmaster Black Series consumables. Power through 1-1/2-in. thick steel and you’ll see why we call Cutmaster 60i the cutting beast.

Filler Metal Innovations
ESAB 7018-1 Prime low-hydrogen Stick electrodes come in a 24-lb. master carton that contains six 4-lb. VacPac™ packages, which can be sold individually. VacPac guarantees factory-fresh electrodes to promote quality assurance, and it is more convenient to carry around jobsites.

Stoody® has launched a family of chrome-free filler metals for combating hexavalent chromium issues, as well as a complete portfolio of NTP (No Twist Pack) drums, making its smaller diameter wires available for high-volume and robotic hardfacing applications.

ESAB’s new Dual Shield® Prime low-hydrogen (H4) Flux-Cored wires feature laser welded seams to combat moisture absorption in humid environments, retaining their H4 designation even after extended storage and exposure. OK AristoRod® 38 Zn is an AWS A5.18 ER70S-G solid MIG wire specially alloyed to minimize porosity and spatter on galvanized steels.

Digital and Segment Solutions
ESAB Digital Solutions is a complete suite of digital services that puts data to work to monitor equipment, streamline documentation, boost control quality and increase productivity.

ESAB will also showcase integrated systems designed for industrial applications, with a focus on mechanized and automated solutions pipe/pipelines/tube fabrication, ship building, structural steel and pressure vessels. The new Pipeweld Orbiter combines the productivity benefits of mechanized welding with the high deposition rates of Pipeweld flux cored wires to lower cost-per-joint by 40 percent.
For those who want to rule the flame, Victor makes it possible. We have helped craftsmen conquer their work by providing the highest-performing gas equipment on the market for more than 100 years. It’s why professionals around the world choose Victor. **Stephen made his choice. Have you?**

**CHOOSE VICTOR.**
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Are you a ruler of the flame? Prove it. Stop by **booth B17087** and compete for prizes in head-to-head oxy-fuel challenges, or share your best work with Victor at [esab.com/rulers](http://esab.com/rulers).
The UP! App

The UP! App, the rapid-response app for industrial equipment repair and service — quickly connecting service requesters to service providers — is pleased to be a sponsor of FABTECH 2019.

When an industrial machine goes down, opening The UP! App on your desktop or mobile phone is your go-to solution to get the problem solved, fast. Instead of spending time searching, calling, and emailing service providers, The UP! App puts you in control by quickly connecting service requesters like you to a network of experienced service providers.

The UP! App is not a downtime monitoring system; it’s a rapid-response, easy-to-use platform which can be used on your desktop or mobile device and is free to download from the Apple App Store or Google Play.

How Does The UP! App Work?
As a service requester, you may submit a request directly in the app or on your computer. Enter your equipment information, a description of the situation, and the current operational status of the machine. Before you know it, you’ll receive offers from qualified service providers with rates, ETAs, and quality ratings. Then you choose the one you want based on your needs and schedule your service — you also can chat with the service provider via the platform, phone, or email if there are any specific details that need clarification prior to service.

Is There a Catch?
There’s no catch — it’s completely free for both service providers and requesters, with no subscription costs or transaction fees for submitting bids or proposals, and no commissions on the work that you need. The UP! App is merely an open marketplace to make matches and scheduling simple.

How You Benefit:

Quotes for Service Fast
You have the ability to pre-load your industrial equipment into The UP! App to make requesting service even faster. Then, when your equipment needs service, you can select from your equipment list, describe the problem and quickly request quotes for completing your service call. Once your request for service is posted, you’ll receive offers from OEMs, distributors, and independent providers, all competing for your business.

Compare Offers
You’re in control when your machine goes down; The UP! App allows you to decide which provider works best for your needs, time frame, and budget. Having all quotes laid out in front of you makes the decision clear and simple. Once you accept the best offer, the service can get started.

Find Specialty Providers
If you have unique or hard-to-service machines, The UP! App is the best way to attract the most qualified people who can help with your service needs. Instead of searching endlessly, only qualified service providers will respond to your request, helping to get your machine up and running quickly.

How do I determine if I’m a Service Provider or a Service Requester?
You can be both! The dual role capability feature allows users to switch between being a Service Provider and Service Requester.

In Service Provider mode you can be matched to incoming service requests to explore new opportunities or connect directly with your existing customers. In Service Requester mode you can take advantage of the UP! network by choosing to send your service requests to all relevant providers or send only to your preferred vendors.

For more information visit TheUpApp.com.
There’s nothing industrial operators love more than green lights. That’s why we’ve made machine tool repair a breeze. The UP! App is a digital platform that connects shops needing service with independent or authorized OEM service providers. Our service-matching communication platform is the backbone of an ever-expanding network of skilled service engineers. Look for The UP! App in the Google Play or Apple App stores and we’ll make sure you keep those green lights glowing.

Discover the most convenient way to identify and engage highly-qualified industrial machinery maintenance and repair service providers.

Learn More at TheUpApp.com
3 Customer Success Stories from AIM Computer Solutions

Since 1991, AIM Computer Solutions has worked with automotive and related manufacturers and suppliers to improve operational processes with business software solutions. AIM guides suppliers as they manage the operations of the complex automotive supply chain with three solutions:

- AIM Vision is the automotive manufacturer’s one-stop ERP solution for managing their most crucial functions.
- AIM Mobility Apps provide real-time input and view of manufacturing processes from mobile devices on the plant floor.
- AutoCOR is a turnkey EDI and barcode label solution for automotive production part suppliers who use Epicor ERP.

Over the years, AIM has worked with numerous metal fabricators, metal stamping facilities, and related metal manufacturers. Here we highlight three customer success stories.

**Sheet Metal Fabricator**

**Hidaka USA**

Management at Hidaka USA, Inc., a sheet metal fabricator, realized that the company’s physical inventory processes were time consuming, draining resources, prone to manual errors, and disruptive to the production process. They determined to find an accurate and streamlined process.

By replacing its manual inventory processes with the AIM Mobility Physical Inventory App, the company reduced direct labor man-hours by 30% for the physical inventory. Now Hidaka USA has an automated and easy-to-use inventory process to count raw, WIP and finished goods with insightful audit records and documentation.

**Paumac Tubing, LLC**

Automotive supplier Paumac Tubing manufactures large and small diameter tubes, delivering bending, flaring, end-forming, cutting, welding, and expansion services to automotive OEMs and aftermarket distribution centers.

The company sought an improved process to automate the entry of non-EDI orders that it received via email or fax.

AIM Computer Solutions automated the information extraction process to eliminate tedious and error-prone manual entry, cutting the processing time by two-thirds. Now order details appear automatically in the AIM Orders module of the AIM Vision® ERP solution.

By automating document capture and data extraction from emails and faxes, Paumac tubing gained full visibility into its non-EDI order process in real time.

**The Grant Group**

You can find parts made by the Grant Group in just about any automobile manufactured in the United States – from Cadillac and Hummer to Ford pickup trucks. The Grant Group makes metal stampings, clips, and assemblies for the automotive industry, and provides engineering, design, and die-building services.

Grant Group needed an accounting application to support its three companies with a single database, provide flexible reporting, and integrate with an automotive supplier-specific application.

Moving to the AIM Vision solution provided the Grant Group with the benefits of multiple company support, flexible reporting, enhanced accounting, visibility into its manufacturing productivity, and ease of integration.

continued on p. 20
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Visit Hypertherm in South Hall Booth A4912 and North Hall Booth B17026

Hypertherm, a U.S.-based manufacturer of industrial cutting systems and software, is highlighting the industry’s only X-Definition® plasma cutting technology, its predictive waterjet technology, and the newest versions of its ProNest® and Robotmaster® software at FABTECH 2019. In addition, the company will provide live demonstrations of its Powermax® air plasma and showcase its extensive line-up of specialty torches and consumables.

Hypertherm’s X-Definition class plasma combines engineering advances and refined high definition plasma processes to deliver unmatched plasma cut quality on mild steel, stainless steel, and aluminum. The company’s HyPrecision™ Predictive waterjet pump includes technology designed to provide warning of upcoming maintenance needs. Hypertherm will have cut samples of both cutting processes available in the South Hall in Booth A4912.

FABTECH attendees can also see live demonstrations of ProNest 2019, Hypertherm’s popular CAD/CAM nesting software for automated cutting, with more than a dozen new features and enhancements to make customers more efficient and profitable. Also, at this year’s show, Hypertherm will demonstrate version 7.1 of its Robotmaster task-based robot programming platform. This new version contains more than 500 improvements, features, and bug fixes that make it possible for welding, cutting, painting, sanding and other process professionals to easily program industrial robots without having to buy or learn complex CAD/CAM software.

Information on Hypertherm’s entire line of Powermax air plasma systems, along with its lineup of specialty torches and consumables, is available in the show’s North Hall in Booth B17026. Activities will include multiple daily demonstrations of cutting, gouging, flush cutting, extended reach cutting, marking, and CNC table cutting. Hypertherm will have demonstration stations on hand so attendees can try out these various processes for themselves. Show attendees who cut with a Powermax on the first day of the show, which fell on Veterans Day this year, helped support Workshops for Warriors, a San Diego based nonprofit that provides vocational training to veterans and transitioning service members. Hypertherm will donate $5 for every person who cut with a Powermax in honor of veterans on November 11th. In addition, attendees have an opportunity to win one of three Powermax45 XP systems on Monday, Tuesday, and Wednesday.

Hypertherm designs and manufactures industrial cutting products for use in a variety of industries such as shipbuilding, manufacturing, and automotive repair. Its product line includes cutting systems, in addition to CNC motion and height controls, CAM nesting software, robotic software and consumables. Hypertherm systems are trusted for performance and reliability that result in increased productivity and profitability for hundreds of thousands of businesses. The New Hampshire based company’s reputation for cutting innovation dates back 50 years to 1968, with Hypertherm’s invention of water injection plasma cutting. The 100 percent associate owned company, consistently named a best place to work, has more than 1,400 associates along with operations and partner representation worldwide.

Learn more at hypertherm.com.
As the industry experts, Caplugs has more than 8,000 masking solutions in stock and ready to ship today. Choose from a wide variety of caps, plugs, tapes, discs and more.

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Building the 21st Century Workforce

It's no secret that the new people entering the workforce are very different from those nearing retirement age. While this may present some challenges, it also offers opportunities for those fabricators and manufacturers able to adapt to shifting demographics, skill sets, and attitudes. This means making it a priority to have a globally competitive workforce that is educated, diverse and motivated, and one that can meet the demands of an evolving digital economy.

 Tomorrow's leadership exchange on Building Tomorrow's Workforce will cover the many challenges involved in hiring, managing and retaining a multi-generational workforce. In addition, panelists will share their own strategies on how to succeed in the evolving workplace.

One of the panelists is Robb Tessier, National Director of Advanced Fabrication Technologies at Airgas, a leading U.S. supplier of industrial, medical, and specialty gases. He plans to attack over-reliance on traditional practices in HR. As part of this, he will explain why relying on “this is the way we have always done it” on the personnel front can turn out to be a recipe for disaster.

“We are all competing for the same workload and customers globally,” says Tessier. “Those companies that are the most innovative and quality conscious have the best opportunity to be successful.”

He values the knowledge of the veteran workers but believes it is best harnessed in combination with younger generations. The most dynamic teams, he believes, are composed of men and women from different age groups and educational backgrounds. They all have different perspectives and experiences. When integrated, it can lead to innovation and high-quality standards.

He will highlight the fact that anyone can research problems on the internet and come to a rational decision. But big data, he believes, can augment the strengths of a multi-generational workforce in order to bring experience and newer technologies together in the right way.

Tessier recommends that companies establish clear-cut career paths for their employees that lay out the steps needed to move on to the next level, and what needs to be done to be granted a pay raise. This approach, he thinks, can go a long way in transforming career growth from a subjective to an objective activity. During the panel, Tessier will cover how he has applied these principles in his own company to bring about greater success and a more fulfilled workforce.

“Putting multi-generational employees together in our 22-week apprentice program has delivered excellent results,” he says. “We find college hires bring a modern technological viewpoint and seasoned veterans bring experience that blend together nicely. They help each other succeed, they find they need each other to resolve work projects to pass the class.”

Learning to Adapt

FANUC America is a leading supplier of robotics, CNCs, and Robomachines with over 24 million products installed worldwide. Dean Steadman, CNC Education Program Manager at FANUC America, has very definite views on the demands of the 21st century workforce, as you will hear in tomorrow’s panel.

“Manufacturing is changing at a rapid pace with the introduction of digital factories, new techniques, and innovation.” Compounded by the problem of skilled workers reaching...
retirement age and the lack of applicants attracted to industry, manufacturers need to find ways to become more efficient. “Current and future employees must learn and adapt to the latest manufacturing technologies and skill sets,” says Steadman.

To produce a more globally competitive workforce that can meet the demands of an evolving digital economy, it is vital to adapt to the trends and challenges inherent in managing a multi-generational workforce. However, with an aging workforce, the U.S. has become vulnerable. The rapid evolution of technology has dictated that to remain technologically advanced and globally competitive, manufacturers must embrace automation.

“The acceptance of advanced automation and digital manufacturing plays into an area that the younger generation has grown up with,” says Steadman. “New employees who learn to use and manage new technology will help companies remain globally viable.”

FANUC America has adopted several strategies to address its own workforce, as you will hear during the panel. For example, it has deployed staff in its CNC and robot divisions to develop products, training, student curricula, and recognized certifications to expose students to technology currently used by advanced manufacturers. It also assists schools and instructors with the implementation of technology courses into their academic programs, so they can learn how to use the same equipment used in the industry.

Another panelist lives and breathes workforce development. As Founder and CEO of Workshops for Warriors, Hernán Luis y Prado, runs a school that provides quality training in welding, plasma cutting, fabrication, woodworking, and other manufacturing skills for veterans and transitioning service members.

He will explain how there are presently 2.3 million well-paying U.S. manufacturing jobs unfilled each year. If nothing is done, he believes that in 10 years the demand will grow as high as 3.5 million. Workshops for Warriors is all about solving the shortage. Students earn nationally recognized credentials that allow them to obtain well-paying careers.

“The health of our advanced manufacturing sectors informs the designing, building and welding of components that are used on our country’s ships, bridges, and machinery,” says Prado. “Yet the average age of those doing that work is 59.”

He likes to cite Apple co-founder, chief executive and chairman Steve Jobs, who once said, “Innovation has nothing to do with how many R & D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R & D. It’s not about money. It’s about the people you have, how you’re led, and how much you get it.”

That’s why he’s passionate about helping to build the workforce of tomorrow. Innovation is essential to the sustainability of America’s manufacturing sector, but harnessing innovation requires a large capable and certified workforce.

The students at Workshops for Warriors receive hands-on training free of charge. Its school offers two primary programs: welding and machining. It 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).

Come hear the experts share their strategies at the Leadership Exchange-Building Tomorrow’s Workforce, tomorrow at 11:00 AM in the Lakeside Center Ballroom to find out how to navigate the changing waters of shop floor personnel.

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AMADA will introduce the world's first fiber laser cutting system with Locus Beam Control (LBC). LBC Technology can freely manipulate the laser beam to create an infinite number of locus patterns and greatly enhance cutting performance. In conventional fiber laser cutting systems, energy density reduces as material thickness increases, resulting in a lack of efficiency. In marked contrast, LBC Technology offers flexible beam pattern control matched to each application, while retaining high-efficiency cutting and high energy density. As a result, VENTIS achieves cutting speeds up to 3 times faster than a conventional 4kW fiber laser while producing superior edge quality.
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AMADA’s Carolina Technical Center and Manufacturing Center in High Point, NC will open in 2020.

Experience Continuous Innovation — AMADA Booth A2103

Stay In Touch With What’s Next.

AMADA will introduce the world’s first fiber laser cutting system with Locus Beam Control (LBC). LBC Technology can freely manipulate the laser beam to create an infinite number of locus patterns and greatly enhance cutting performance. In conventional fiber laser cutting systems, energy density reduces as material thickness increases, resulting in a lack of efficiency. In marked contrast, LBC Technology offers flexible beam pattern control matched to each application, while retaining high-efficiency cutting and high energy density. As a result, VENTIS achieves cutting speeds up to 3 times faster than a conventional 4kW fiber laser while producing superior edge quality.

Revolutionary VENTIS Fiber Laser with Locus Beam Control

The new HRB Series of Press Brakes will be produced at the Carolina Manufacturing Center.

- HRB 1003 ATC — The latest advancement in press brake technology combined with AMADA’s patented Automatic Tool Changer (ATC) enables you to perform even the most complex tool setups in less than 4 minutes.

- 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.

- 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.

AMADA is proud to be the FABTECH mobile app sponsor.
Metalformers Build Own Skilled Workforce Solution

Over the long, strong history of the manufacturing industry in the United States, a single word has characterized its progress: innovation. Manufacturers have engineered solutions to some of the country’s biggest challenges, constantly creating processes and products to meet the moment.

So it should be no surprise that today, as manufacturing faces the dual industrial challenges of shifting demographics and evolving technology, leaders in the sector are innovating their way to solutions – and success.

Right now, the American economy is in the middle of the second-longest expansion in our nation’s history, and the manufacturing industry is an engine of this expansion. There is no doubt that the industry has a big opportunity here, but companies will need to adapt and advance in order to meet it. If history is any indication, a solution is right around the corner – or maybe just a mouse click away.

A Custom Solution for a Common Challenge

In October of 2018, the Precision Metalforming Association (PMA) launched METALFORM EDU, the only online training program specifically designed for workers in the metalforming industry. The platform, which can be found at pma.org/metalformedu, is user-friendly and packed with easy-to-follow demonstration videos. Companies and employees can get started quickly on the platform by using the nearly 30 PMA-designed learning paths with recommended courses for key jobs and skill sets needed in the metalforming industry. A deeper dive reveals more than 550 courses in both industry-specific and broad business and professional skills. Each course includes interactive eLearning content, a downloadable study guide, and a graded final assessment.

Under the direction of PMA President David Klotz, the platform is constantly evolving, incorporating new courses, adapting different license options and even including additional languages. Klotz, who took the reins of the Association in February of this year, is passionate about assisting PMA members and others with the industry-wide challenge of finding – and keeping – skilled workers.

The recruitment, training and retention of workers is our members’ top priority,” Klotz says.

And it’s no wonder. The industry faces a daunting skills gap, with some half-a-million manufacturing jobs currently open in the United States and more openings anticipated as older workers, who make up the bulk of the sector’s employees, advance toward retirement. Experts predict that more than 2.6 million baby boomers will retire from manufacturing jobs over the next decade.

When companies struggle to hire and keep skilled workers, their bottom lines take a hit.

Craft your finishing technique with PFERD and Milwaukee Blacksmith

At this year’s FABTECH®, PFERD will be partnering with a very talented company called Milwaukee Blacksmith, whom you may recognize from the History channel TV show, Milwaukee Blacksmith. Stop at PFERD’s booth B31017 to see the new VICTOGRAIN® and X-LOCK® products, as well as the blacksmiths in action, where they will be doing different finishing demonstrations on a steel globe!

NORTH AMERICA’S LARGEST METAL FORMING, FABRICATING, WELDING AND FINISHING EVENT
## WEDNESDAY, NOVEMBER 13

### SCHEDULE-AT-A-GLANCE

<table>
<thead>
<tr>
<th>TECHNOLOGY</th>
<th>8:00 AM - 9:30 AM</th>
<th>10:00 AM - 11:30 AM</th>
<th>12:00 PM - 1:30 PM</th>
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<td><strong>3D/ADDITIVE MANUFACTURING</strong></td>
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<td><em>NEW! F90:</em> The ROI of 3D Printing: Analyze the Cost of Implementing 3D Printing for Your Business</td>
<td>Room S403A</td>
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<td><strong>AUTOMATION</strong></td>
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<td><em>NEW! F91:</em> Effective Automation for Joining in Emerging Technologies</td>
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<td><em>NEW! C90:</em> Architectural Coatings - Today and Future</td>
<td>Room S501A</td>
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<td><strong>FINISHING</strong></td>
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<td><em>NEW! C91:</em> Optimizing Powder Operations</td>
<td>Room S501BC</td>
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<td><em>NEW! C92:</em> Creative Finishing Solutions</td>
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<td><strong>FORMING &amp; FABRICATING</strong></td>
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<td><em>NEW! F93:</em> A Modular Approach to Turning Non-Value-Added Time on a Press Brake into Productive Time</td>
<td>Room S502A</td>
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<td><em>NEW! F94:</em> Roll Forming: Press Tonnage Rating and Welding Systems</td>
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<td><strong>LASER</strong></td>
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<td><em>NEW! AWF100:</em> Laser Welding Workshop</td>
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<td><strong>LEAN</strong></td>
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<td><em>NEW! F96:</em> Lean Principle: Go to Gemba</td>
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<td><strong>MANAGEMENT</strong></td>
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<td><em>NEW! F97:</em> Ensuring Tomorrow: How to Effectively Choose and Prepare Your Successor</td>
<td>Room S404BC</td>
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<td><em>NEW! F100:</em> Impact and Quality Considerations for Additive Manufacturing</td>
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<td><strong>MARKETING &amp; SALES</strong></td>
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<td><em>NEW! F98:</em> Digital Recruiting Strategies &amp; Data for Continuous Improvement</td>
<td>Room S405A</td>
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<td><em>NEW! F101:</em> Conveying Effectively</td>
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<td><strong>SMART MANUFACTURING</strong></td>
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<td><em>NEW! F99:</em> The Smart Factory &amp; Feasibility with Case Studies</td>
<td>Room S402B</td>
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<td><em>NEW! F102:</em> Advantages of Waterjet Cutting Machining Technology</td>
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<td><strong>STAMPING</strong></td>
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<td><em>NEW! S90:</em> Stamping-1</td>
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<td><em>NEW! S91:</em> Sensors-1</td>
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<td><strong>WELDING FABRICATION</strong></td>
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<td><em>NEW! W90:</em> Optimization of Welding Documentation and Continuity Efficiency Using Computer Software</td>
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<td><strong>WORKFORCE DEVELOPMENT</strong></td>
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<td><em>NEW! F207:</em> Operational Excellence for Significant and Sustained Performance With Incentive Pay</td>
<td>Room S401BC</td>
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<td><strong>WELDING</strong></td>
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<tr>
<td>W11: AWS Educational Overview of Welding Codes and Standards - Day 2</td>
<td>Room N133</td>
<td>8:00 AM</td>
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<tr>
<td>W14: “Welding” Don’t Be Afraid to Ask</td>
<td>Room N134</td>
<td>8:00 AM</td>
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<tr>
<td>W15: Stainless Steel Welding D1.6 Structure</td>
<td>Room N132</td>
<td>8:00 AM</td>
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<tr>
<td>W16: 5th international electron beam conference - Day 2</td>
<td>Room N227B</td>
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<tr>
<td>W19: Development of a New Standard for Metal Additive Manufacturing: AWS D201/D203M, Specification for Fabrication of Metal Components Using Additive Manufacturing</td>
<td>Room N131</td>
<td>9:00 AM</td>
<td>11:00 AM</td>
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<tr>
<td>W25: SESSION 10: Plenary Session</td>
<td>Rooms N138-N140</td>
<td>8:00 AM</td>
<td>9:30 AM</td>
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<tr>
<td>SESSION 11: In-Situ Measurement Techniques</td>
<td>Rooms N138-N140</td>
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<tr>
<td>SESSION 12: Honorary Symposium for Prof. D. Olson</td>
<td>Rooms N138-N140</td>
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<tr>
<td>SESSION 13: Industrial Technology</td>
<td>Rooms N138-N140</td>
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<tr>
<td>SESSION 14: Process Sensing &amp; Control</td>
<td>Rooms N138-N140</td>
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<td>SESSION 15: Honorary Symposium for Prof. D. Olson</td>
<td>Rooms N138-N140</td>
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<td>SESSION 16: Weldability</td>
<td>Rooms N138-N140</td>
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<tr>
<td>W22: RWMA Resistance Welding School - Day 2</td>
<td>Room N227A</td>
<td>8:00 AM</td>
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Detailed Education Program session descriptions, speakers, pricing, room locations and more can be found at fabtechexpo.com/edu.
3 Customer Success Stories

continued from p. 10

Read more from Jeffrey, AIM Computer Solutions’ MRP Software Consultant, in the FATBECH blog How the Right ERP Configuration Delivers Traceability in Manufacturing at fabtechexpo.com/blog.

Visit AIM at FABTECH Booth D4513 and follow AIM on LinkedIn, @aimcomERPnews on Twitter, and visit aimcom.com.

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FumeVac®—The absolute best way to control weld fumes at the source.

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fumevac.com | 866.386.3822
FUMEVAC Weld Fume Extraction at the Source

FumeVac’s revolutionary high pressure/high capacity systems are the most effective way to protect welders from the serious threats caused by hexavalent chromium, manganese, and other harmful contaminants present during the welding process. When you contain and remove weld fume at its source you protect yourself and your welders; you get peace of mind.

AIR-COOLED FUME EXTRACTION MIG GUNS

ErgoMax™ MIG Guns are an essential component to creating a safe work environment. No other gun on the market removes weld fume as efficiently and effectively, meeting the ACGIH and OSHA air quality standards for manganese and hexavalent chromium. Paired with a FumeVac high pressure/high capacity vacuum extraction source, ErgoMax MIG Guns offer the highest volume throughput of any other competing guns.

ErgoMax MIG Guns are designed to perform in the most challenging of welding environments. The lightweight design, ball-joint flexibility, and ergonomic handle ensure a semiautomatic fume gun that is easy to maneuver and adapts to all work positions. High airflow capacity in the gun minimizes heat build-up and results in a cooler, more comfortable operating temperature for users.

FEATURES & BENEFITS

- High quality, high duty cycle MIG & Flux Cored welding performance
- Durable copper alloy consumables for high conductivity, cool operation, and long life
- Rugged, lightweight polymer handle with a 360° swivel ball-joint
- High extraction flow rates minimize heat buildup for added comfort
- Chrome-plated metallic outer neck tube provides an added measure of heat dissipation for super cool operation
- Optimized fume extraction zone prevents disturbance to shielding gas
- Simple, high strength stainless steel trigger for long life and minimal cost of maintenance
- Crush and heat resistant vacuum hose with optional leather or Kevlar hose covers
- Adjustable bypass vent for airflow control in confined spaces
- Coaxial power cables feature heavy duty swaged copper connections for maximum conductivity and durability
- Low friction liners provide exceptional wire feeding performance for consistent arc starts and weld stability
- All models come standard with Euro-style connections

FV-500-20
- Designed for in-plant installation
- Capacity of up to 8 guns using auto-valve kits
- Self-contained unit–UL listed control with disconnect
- Comes standard with high efficiency filters
- 450 ft² high capacity main filter with additional after filter
- Filters air for recirculation, either back into the workspace or outside
- Wheel kit available

FV-225-3
- Airflow options to control weld fumes
- Choose from 2 different size inlets for light to heavy duty applications
- Multiple turbine design
- 225 ft² high capacity filter–highest capacity filter available on the market
- Filters air for recirculation, either back into the workspace or outside
- Rugged, swivel casters with lock brakes
- Meter for tracking hours used

Your Global Automation Partner

Increase Productivity & Safety in Machine Tools Applications

Harsh environments in fabricating, stamping and welding applications create challenges for many automation solutions, leading to downtime. From weld slag to high temperatures to impact and abrasion, you need rugged and reliable solutions that stand up to the toughest conditions. Sensors, connectivity and fieldbus technology from Turck get the job done. Whether you need sensors for die protection or that are weld resistant, intelligent safety I/O modules, or connectivity solutions that protect against weld slag, Turck is your partner with a full range of automations solutions that are ideal for metal forming and welding equipment.

Visit us at Booth #A1449
Metalformers Build Own Skilled Workforce Solution

A recent industry survey showed that a lack of workforce capacity forced one quarter of manufacturing companies to turn away new business in the first quarter of this year.

And that impacts the whole industry – and larger U.S. economy. Key findings from the 2018 state of manufacturing analysis by accounting and consulting powerhouse Deloitte predicts significant industry growth over the next decade. However, the study also suggests that as much as $454 billion in additional manufacturing value could be lost in the year 2028 alone, if the industry is unable to fill the anticipated open jobs.

"METALFORM EDU reflects PMA’s leadership in tackling the vitally important challenge of recruiting and training a high-caliber workforce now and in the future," Klotz says.

"METALFORM EDU reflects PMAs leadership in tackling the vitally important challenge of recruiting and training a high-caliber workforce now and in the future," Klotz says.

Speaking Their Language

With majority funding from the PMA Educational Foundation, the unique METALFORM EDU program helps companies build their own talent pipeline by providing access to the right training, at the right time, in the right format for employers and employees.

"Younger workers, like generations of workers before them, want to know something about what they are going to be doing before they do it," says Bill Jordan, Human Resources Manager at Larson Tool & Stamping in Attleboro, MA. "But, new employees today do not necessarily want to read a manual or sit down with an in-person instructor. They are accustomed to researching and learning at the computer, and at their own pace. METALFORM EDU allows them to get the information they need in a format that is comfortable and familiar to them."

The platform is also convenient and cost-effective for employers.

"It’s great that we don’t have to send people out for a day-long seminar," continues Jordan. "And, with the built-in quiz component, we can still know that participants have really mastered the material."

The coursework available on the platform is not specific to new hires. In fact, as the team at Henderson Stamping & Production, Inc, found out, it can be just as useful for experienced employees. The Henderson, TN-based company is planning a significant expansion that will involve bringing on a number of new workers.

"METALFORM EDU has helped us assess and increase the knowledge base of our existing employees," says Stephanie Ray, the company’s Human Resources Manager. "These are really experienced, talented people, but also people who have been in the industry for a long time. Some of them use industry jargon and other unofficial terms and language. That’s fine until you want to bring in new employees – and you don’t want to have a lot of confusion. So, right now, we’re using these training courses to unify our staff around common terms and best practices so that we’re all on the same page as we build and grow for the future."

Ray also expects to use the METALFORM EDU platform with the company’s new hires. “The struggle with the labor pool is real,” she says ruefully. “Being able to offer the training that people need in a way that is less expensive and more practical for our company is a big benefit to us.”

Early Signs of Success

PMA members and others who have tried the METALFORM EDU platform and coursework are reporting positive results.

Henderson Stamping & Production, Inc’s Ray notes that all of the company’s employees who have participated in the online courses have been impressed. "Our employees said that the classes have good information and that they learned something new," she says. Just as important, Ray reports that the training is having an impact on the company’s product. "Our group leaders say that they are seeing improved performance from employees who have done the training."

"I personally have taken over 30 courses on the METALFORM EDU platform," says Larson Tool & Stamping’s Jordan. "If people take a look at the options, they will be surprised at how many there are that are truly useful to anyone who wants to improve in their manufacturing industry career. I’m excited to get this out to as many people as I can."

More information about the METALFORM EDU platform and course catalogue is available online at pma.org/metalformedu. Use the license calculator to choose an appropriate plan for your workforce training needs.

FUMEVAC Weld Fume Extraction at the Source

continued from p. 21

FV-120 / FV-225
• The most efficient and versatile solution for fume source capture
• Specifically designed for semiautomatic welding processes
• Single or dual high performance turbine design
• Capable of 90-125 CFM at the torch
• Options for 120 ft2 or 225 ft2 high-efficiency filters
• Casters for easy portability

To learn more visit Booth B31113 or www.fumevac.com or call 866.386.3822.
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See more than ever before.
Discover dozens of our latest products and solutions, including our new systems for manual plasma cutting, automated orbital welding, cutting automation solutions, and data-driven innovations. We will also be featuring our newest filler metals, our full range of arc welding equipment (from light portable to heavy industrial), a regulator for extremely high-flow applications, and the most rugged portable wire feeder on the market.
Check out our dedicated retail area to see the merchandising and marketing support ESAB is bringing to distributors and channel partners – including one of our new ESAB ON THE ROAD traveling demo vans.

Try more than ever before.
Go hands-on with multiple demo stations for welding and manual plasma cutting, and put your oxy-fuel skills to the test in our Victor® Rulers of the Flame cutting competition.

Learn more than ever before.
Get schooled at ESAB University (in partnership with Weld.com), a dedicated area within the booth featuring multiple daily educational sessions by welding experts. Plus, you’ll have the opportunity to meet and learn from Ian Johnson and the ESAB Elite team.

Visit booth B17087 and come see how we can build the world of tomorrow, together.

VICTOR® // THERMAL DYNAMICS® // TWECO® // ARCAIR® // EXATON™ // STOODY® // ALCOTEC® // AMI®
IVEC Ultra: An Applied Science Approach to Ventilation Technology

Manufacturers and their employees deserve the best solution to air quality. IVEC® has taken a fresh approach to ambient air ventilation. IVEC engineers innovative, award-winning technologies to provide cleaner air to manufacturers with the most cost-effective and efficient solutions. This maximizes a ventilation system’s return on investment. Designed using state-of-the-art technologies, the patented IVEC Ultra is the only ventilation system on the market that combines the lowest energy usage, the fewest maintenance requirements, and the most control capabilities to provide the cleanest air. The IVEC Ultra ventilation system revolutionizes cost-saving efficiencies in industrial air cleaning and enhances employee productivity and safety to previously unattainable levels. Using IVEC-exclusive technologies and engineering aligned with industrial ventilation principles, IVEC Ultra runs smarter to provide cleaner air with the lowest overall cost of ownership compared to conventional ventilation systems.

The IVEC Ultra ventilation system provides you with a previously unavailable and advanced approach to air quality to achieve the following:

- Energy savings
- Labor savings
- Maintenance efficiencies
- Employee productivity
- Safety improvements

The IVEC Way Includes:

PRELIMINARY SITE ANALYSIS
Manufacturers get a site analysis to gather information on their ventilation system and receive a preliminary estimate of savings.

EDUCATION
Take on-site visits to customers with similar systems, visit our Technology Experience Center for hands-on demonstrations of the technologies available and take a class on industrial ventilation.

SERVICE
IVEC provides you with professional, on-going support that assists you with the controlling and monitoring of your IVEC Ultra system to help you verify its performance and keep your manufacturing processes up and running at all times.

FUNDING
IVEC helps identify if manufacturers qualify for grants, incentives or subsidies with a calculation of ROI and a comprehensive Total Cost of Ownership analysis.

ANALYSIS
IVEC can provide baseline energy and particulate readings to evaluate air makeup and exhaust—a full engineering study and written report is available as an optional service.

FINAL QUOTE
Provide a design concept paired with a final quote based on the analysis or engineering study.

INSTALL
Installation of the equipment by qualified and approved personnel so it is turnkey-ready based on your current and future business requirements.

CONTROL
Control the system from central HMI or remotely using the Remote Access and Verification (RAAV) system.

SAFE, SECURITY & PRODUCTIVITY.
The Defender™, from Rite-Hite Machine Guarding, is the industry’s most effective device yet. Designed to operate for +1 million cycles to meet even the most demanding manufacturing processes. Anywhere that a machine operator interfaces with a machine, robot or process is an ideal application for the Defender.

GLOBAL expertise at the LOCAL level. Find a Rite-Hite Representative near you by visiting www.RiteHite.com or calling 1.800.823.4139.
Scam Me if You Can  
continued from p. 1

themselves from fraud. Due to his history as a scammer on the FBI’s Most Wanted list (colorfully portrayed by Leonardo Di Caprio in the Spielberg movie Catch Me If You Can), his ability to teach others how to avoid fraud is second to none.

It became very clear within a few minutes of starting his talk that Frank Abagnale knows exactly how scammers work. Through a series of real-life anecdotes, stories and his own experiences in conning millions out of unsuspecting victims, Abagnale revealed the very latest tricks that today’s scammers, hackers, and con artists use to steal money and personal information, whether online, over the phone, or face to face.

Charity scammers, for example, know how to tug at the heartstrings. They engagingly spin heartwarming but fabricated stories in person, over the phone, via email, or in places like online fundraising sites. There was the one about a homeless man helping a couple who ran out of gas. All three parties were in on a scam that raked in $400,000 before they all disappeared. Abagnale’s advice: It’s important to be careful when donating to causes online; researching the charity and knowing the fundraiser (preferably personally) are two of the best ways to avoid getting burned.

Online dating apps, said Abagnale, have become a wild world of opportunity for scammers. Catfishing has become commonplace — where someone is lured into a relationship by means of a fictional online persona. Over the years, romance scammers have stolen millions of dollars from unsuspecting people looking for love. Abagnale revealed that the tally has gone as high as $220 million in a year. In one case, a lady was contacted by a handsome, soft-spoken man who claimed to be a war veteran. After going out for a few weeks, he convinced her to lend him her Audi and some money. He spent the money on gambling and the car was never seen again.

And with so many high-tech automobiles hitting the roads, cyber thieves are finding inventive ways to hack vehicular systems. Some lurk near vehicles to record digital codes from car fobs when owners are locking up. They can then electronically transmit that code to be able to enter the automobile illegally and take whatever is inside. This is a favorite trick of criminals looking to score expensive laptops and tablets as well as any suitcases or valuable they notice in the vehicle.

Hackers can even take over the AC, radio and other controls of vehicles from outside. As cars with self-driving and autopilot features are becoming more common, it is now possible for a criminal to remotely take control and drive a car away. It is just too easy these days, due to the use of wireless networks and computerized systems, to maneuver around the lax security measures typically provided for vehicles. Abagnale explained the steps to take for protection.
Social media, he added, has become an identity thief’s treasure trove. Criminals look through Facebook and other social media postings to gain a picture of someone’s life. This allows them to craft the perfect email scam to trick even the most careful people. Take the case of a person who went for drinks with a golf buddy. A thief used this information and other data posted online about the meeting with the golf buddy and about a cause important to him to devise an email scam that seemed to be coming directly from the golf buddy he had met the other day. The email detailed the bar where they had met, and other items pulled from his online postings to complete a truly convincing picture of a good friend following up from a recent meeting.

Passwords Are Not Enough

Some assume that passwords act as a safeguard against attack. That is true to some degree. However Abagnale said that passwords can be hacked even when they require re-authentication. SIM swapping is an approach where hackers contact a phone carrier claiming to be the victim. They manage to pass any security checks by doing online research. That enables them to redirect the victim’s SIM card and incoming texts to their own phone, easily getting the security code needed for reverification from online accounts.

It wasn’t only online and digital scams or cybercriminals that Abagnale warned about. He brought up the fact that DNA testing companies have been selling biological data to third-party companies. As well as scammers, this puts the individual’s biology at risk of falling into the hands of health insurance companies and employers who could use this information to discriminate against people; perhaps to turn them down for jobs or coverage.

Abagnale’s simple but counterintuitive rules provided plenty of guidance against scams. Perhaps one of the biggest errors, he said, is to completely trust computerized security or to think you are not vulnerable to attack.

“If you believe you have a foolproof system, you have failed to take into consideration the creativity of fools,” said Abagnale.
Strengthening the Welding Workforce With U/LINC®

Welders have made, and continue to make, significant contributions to manufacturing. Since the 1880s, these tradespeople have utilized their unique talent to create the very structures of this country. Today, their work enables almost everything we encounter—from our cars, homes, cell phones, buildings and bridges.

Although manufacturing has seen a boom in recent years, welding, like other sectors, struggles in one critical area: Securing a highly skilled workforce to keep up with the demands of advanced manufacturing. While welding affects about 50% of gross national products made in the U.S., companies still struggle to find workers equipped with essential skills. To make matters worse, the American Welding Society estimates the U.S. will need more than 450,000 welders by 2022 to meet the demands of the industries they serve.

College as the “only option” for success has not helped either. For the past 30 years, parents and school counselors have steered students in the direction of a four-year degree, urging them to forego careers in trades and industry. When you compound the damaged image of skilled trades jobs with baby boomer retirements, technology advancements and lack of interest among youth, the shortage of skilled welders deepens.

New opportunities to solve these problems are on the horizon.

Stakeholders in the industry—business, academia, government and associations—are working together to help curb the skills gap challenge and ensure welders have the skills needed to perform successfully.

Earlier this year, Lincoln Electric and Tooling U-SME announced plans to broaden workforce education for the welding sector by making U/LINC—Lincoln Electric’s flagship welding curriculum platform—more user-friendly and accessible to industry and educational institutions. The new partnership will allow Tooling U-SME to administer U/LINC, leveraging its extensive access to industry and academia, as well as its competency-based learning and development solutions.

Powered by Tooling U-SME’s learning management system, U/LINC improves learning and student engagement, while giving management and instructors control over their programming.

Developed by 35 of the industry’s top welding instructors, U/LINC contains more than 18,000 pages of curriculum resources connecting welding theory, practice, and knowledge in one place. Subscribers to U/LINC can easily search, download, and print out lesson plans, class assignments, presentations, group-based activities and more with in-depth directions, tips and teaching strategies that leverage Lincoln Electric’s more than 100 years of welding training experience.

The latest collaboration between Lincoln Electric and Tooling U-SME is crucial. Not only are the partners able to reach a critical mass of instructors and training authorities, they can directly develop today’s and tomorrow’s welding workforce and ensure users learn from the latest industry standard curriculum.

To learn more about the U/LINC curriculum platform, visit https://education.lincolnelectric.com/ulinc

BOOTH A4950

Visit our booth A4950 to see the latest in:
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BOOTH # B37060

Come see Chad Osborne who appeared on Forged in Fire S2E7 and was a finalist in the Show. Chad was also voted a “Fan Favorite” making a second appearance on the show in S4.
Chad will be at Laser Marking Technologies Booth # B37060 on Wednesday - Day 3 of FABTECH from 1:00PM - 3:00PM #ForgeALicious #AreYouForgingKiddingMe?
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The new TruBend 7050

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See the TruBend 7050 at FABTECH Booth A2904 / www.trumpf.com
Har-Bach — Your Single Source for Tools Process Machine and Controls

Har-Bach Marketing, Inc. is a USA owned consortium of companies, products, and services delivering the latest manufacturing tools, equipment, systems, and controls to the fabrication industry. Our product and service lineup consists of:

**Fit Up Gear®**: Innovative fitting and alignment tools that aid in the fabrication of storage tanks, ships, barges, and rigs as well as many other structural applications. No-Mar magnetic fitting tools that are up to 100 times faster than traditional tools without scarring, clamps, safety items, LED lighting, water jet cutting, and CNC milling capabilities.

**Har-Bach Positioning**: Sales, rental and service of systems and equipment we design and build such as tilt and rotate positioners, turning rolls, fit up beds, growing lines, column and boom manipulators, slides, head and tailstocks.

- Driven by HAWC (Har-Bach Advanced Wireless Control), the most advanced and reliable wireless control system available today

**Pathfinder**: Precise seam tracking solutions with exact identification of the seam and determination of the alignment of the sensor head to the seam thanks to the use of a three-line laser.

**Fusion Technologies**: Equipment and consumables for surface protection, hardfacing equipment including traditional welding processes, Plasma Transfer Arc (PTAW), and laser cladding, automation, robotic cells, a complete line of consumables for spray, cladding and weld overlay with cored wire, rods, and powders to fight the most severe wear conditions, and materials such as iron, cobalt and nickel alloys, tungsten carbide, diamonds, inserts and custom solutions for most surface protection challenges.

**Padeye.com**: One-time placement, weldable forged lifting padeyes in A36 carbon steel and 316 stainless steel that are engineered and certified to meet all ASME BTH-1 classes and categories eliminating the need and time to engineer, fabricate, machine, and certify lifting padeyes.

**Har-Bach Welding Tables and Accessories**: 28 series 3D welding tables and accessories that have been used on projects from the Acura NSX Supercar to Liquid Natural Gas (LNG) tanks for Lockheed Martin.

Har-Bach products have been trusted on a multitude of projects:

- Construction of military float craft, aircraft carriers and submarines
- Offshore drilling and production equipment including blowout preventers, valves and pipe
- Rail cars and passenger vehicles
- Man-rated space flight vehicles combining the latest metals and composites

With over 100 years of combined industry experience, we have become a leading innovator of systems, equipment and tools that save time, money and lives. We are constantly improving our products and services with the latest technology to assist your manufacturing process.

Our CNC machine shop and fabrication bays are ready for your next project.

**Visit us at FABTECH Booth B35048 to learn more and see live demonstrations of our products.**

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**Qirox**

The complete product family for automated welding and cutting

The complete solution for automated welding and cutting. Robot technology, software, sensors and positioners from a single source. Maximum profitability due to highly efficient, customised systems.

www.cloosrobot.com

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**Cloos**

Weld your way.
When Experience Matters

Positioning • Robotics • Seam Tracking • Workholding

This is who we are, with over 100+ years of experience on staff. We have the right team to build your next automation project from “Fit to Fab”

See us at FABTECH
Booth B35048

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GRIND YOUR WAY TO GAME DAY!

Request a demo of Walter’s all-new all-powerful Xcavator XX™ ceramic grinding wheel and you could win a football weekend prize pack in Chicago.*

Visit the Walter booth for details. Booth B35035

*Certain conditions apply. Must be eligible for contest entry.