FABTECH 2017

CHICAGO 
NOV 6 – 9

LEARN | MEET | EXPLORE | BE PART OF THE

INDUSTRIAL EVOLUTION

EXPERIENCE THE FUTURE OF METAL FABRICATING AND MORE — ONLY AT FABTECH

INSIDE:

EXHIBITOR LIST 
SPECIAL EVENTS
SCHEDULE-AT-A-GLANCE

EDUCATION PROGRAMS
HOTEL AND TRAVEL
PLANNING TOOLS

#FABTECH17

FABTECH

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

THANK YOU TO OUR PLATINUM SPONSORS
GET CONNECTED with TRUMPF

FABTECH is the perfect opportunity to get connected with TRUMPF. We invite you to stop by our booths to see our latest selection of machine technology, automation, software and services. Talk with our experts and learn how a smart connection with TRUMPF can keep you ahead of your competition. With 3 booths, 9 production technologies and 13 machines in operation, we hope to have what it takes to make your fab shop a digital success.

FABTECH Booths A2601, B11013, B103 / www.trumpf.com

EXPERIENCE THE FUTURE OF METAL FABRICATING AND MORE ONLY AT FABTECH 2017

FABTECH provides a dynamic environment where you can meet with world-class suppliers, see the latest industry products, developments and trends, and uncover the tools to improve productivity, facilitate growth, and increase profits.

REGISTER TO ATTEND TODAY AT FABTECHEXPO.COM

► LEARN + PROGRESS
Interact with the largest gathering of technical experts and industry-leading visionaries — and learn not only what’s new, but what’s next. Gain valuable, can’t-miss insights from best-in-class educational and training programs.

► MEET + ADVANCE
Happy hours, Industry Night and other special events allow attendees to network with peers, learn from top industry experts, exchange best practices and explore the latest technological industry advancements.

► EXPLORE + GROW
Want to make a real difference in your business, your product and your bottom line? Bring your entire team to FABTECH and uncover more cost-saving ideas and strategies that will differentiate you from your competition.

► FABTECH 2017 FEATURES
OVER 1,700 EXHIBITORS
KEYNOTE SPEAKERS
150+ EDUCATIONAL PROGRAMS
PRODUCT DEMONSTRATIONS
500+ NEW PRODUCTS
EXPERT-LED DISCUSSIONS

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REGISTER TO ATTEND!

Avoid lines onsite by registering online at fabtechexpo.com. Use the Promo Code next to your mailing address when registering.

SHOW ADMISSION

Exhibit-only attendance is FREE if you register by November 3, 2017. Beginning November 4, the cost to attend the exhibits is $50. AWS, FMA, SME, PMA and CCAI members may always attend the exhibits for FREE with a valid member card.

LOCATION

McCORMICK PLACE
2301 S. KING DRIVE
CHICAGO, IL 60616

SHOW HOURS

MONDAY, NOVEMBER 6
10:00 AM – 6:00 PM

TUESDAY, NOVEMBER 7
9:00 AM – 5:00 PM

WEDNESDAY, NOVEMBER 8
9:00 AM – 5:00 PM

THURSDAY, NOVEMBER 9
9:00 AM – 3:00 PM
NEW FOR 2017!

3D/ADDITIVE MANUFACTURING PAVILION
Additive Manufacturing is one of the fastest-growing technologies of the 21st century and FABTECH has taken notice. To accommodate the increasing interest in this technology, FABTECH has added the new 3D/Additive Manufacturing Pavilion featuring over 25 exhibitors and a 3D/Additive Theater that will offer daily presentations, education and networking for attendees interested in learning more about Additive Manufacturing.

EXPANDED TUBE PRODUCERS & SUPPLIERS PAVILION
FABTECH, in a joint venture with Messe Düsseldorf, showcases an expanded Tube & Pipe Pavilion to bring the latest technology from all over the world to meet the needs of users of tube and pipe profiles.

THREE HALLS OF TECHNOLOGY TO EXPLORE

TECHNOLOGY ON DISPLAY
additive manufacturing/3D printing • arc welding • assembly • bending & forming • brazing & soldering • business services • coil processing • cutting • fastening & joining • finishing/paint & powder coating • finishing/plating • gases & gas equipment • hydroforming • inspection & testing • job shop/contract manufacturing • lasers • lubrication • maintenance & repair • material handling • metal suppliers • plate & structural fabricating • press brakes • punching • resistance welding • robotics • roll forming • safety & environmental • saws • software/machine controls • stamping • thermal spraying • tool & die • tooling • tube & pipe fabricating or welding • tube & pipe producing • waterjet • welding consumables • welding machines
MONDAY, NOVEMBER 6

KEYNOTE PRESENTATION

**FABx TECH TALKS**

8:45 – 10:00 AM

Embracing the wildly popular TED Talks concept, FABTECH 2017 kicks off with a new and exciting format for the opening keynote. The FABx Tech Talks will spotlight visionary leaders who will motivate and inspire attendees via short inspirational talks on the topics of transformation, growth, advancement and expansion for the future of manufacturing. Come hear how these leaders are driving innovation to take their businesses to the next level.

Participants Include:

- Jacques Panis
  President, Shinola
- Adam Genei
  Founder, Mobsteel
- Michael Walton
  Industry Solution Executive (Manufacturing Industry), Microsoft
- Karen Kerr
  Executive Managing Director, GE Ventures
- Albert Paley
  Sculpture Artist, Paley Studios
- Jesse James
  West Coast Choppers, Custom Car and Bike Builder

OPENING CEREMONY

10:00 AM

Join the FABTECH family in the Grand Concourse as we kick-off FABTECH 2017. See the unveiling of the Paley/James metal sculptures. Albert Paley and Jesse James of West Coast Chopper fame used their unique styles and collaborated to create two pieces of art. Each started their own sculpture and finished the other. The completed sculptures will be on display throughout the show.

EXPERT PANEL PRESENTATION

**ADVANCED MANUFACTURING FOR THE NEXT INDUSTRIAL EVOLUTION**

12:30 - 1:30 PM

Our panel of experts will focus on the evolution taking place in manufacturing. Advanced manufacturing is transforming the economy and jobs, using cutting-edge technology and new manufacturing processes to accelerate innovation. Our panelists will discuss how their companies stay at the forefront of manufacturing advancements and how they embrace disruptive technologies to remain competitive and profitable.

Moderator: Sridhar Kota, Executive Director of MForesight

Panelists:
- Jerry Foster, CTO, Plex Systems
- Karen Kerr, Executive Managing Director, GE Ventures
- Jacques Panis, President, Shinola
- Michael Walton, Industry Solution Executive (Manufacturing Industry), Microsoft

SPONSORED BY:

PLEX

THE MANUFACTURING CLOUD
TUESDAY, NOVEMBER 7

KEYNOTE PRESENTATION

"FAST N’ LOUD” WITH RICHARD RAWLINGS
8:30 – 9:30 AM
Co-host of Discovery Channel’s popular “Fast N’ Loud” series and founder of Gas Monkey Garage, a world-renowned hot rod shop, Richard Rawlings will share his entrepreneurial spirit and career to inspire manufacturers to innovate and take risks. Rawlings will speak about his businesses, challenges, opportunities, and pursuing one’s dreams with the discipline and persistence that is required for success. Rawlings will utilize any remaining time to answer audience questions about his life, the show, his business or even the building of hot rods.

FEATURED PRESENTATION

EVOLUTION OF ADDITIVE MANUFACTURING AND WHAT IT MEANS FOR THE FABRICATION INDUSTRY
10:30 – 11:30 AM
Todd Grimm, President, T. A. Grimm & Associates, Inc.
3D Printing. Additive Manufacturing. What does this technology mean for the manufacturing industry? How should we be preparing for the future? Industry expert, Todd Grimm, will explain the impact that additive manufacturing is having and will continue to have on manufacturing and how companies can embrace what it has to offer.

EXPERT PANEL PRESENTATION

EFFECTIVELY INCORPORATING ADDITIVE MANUFACTURING INTO YOUR BUSINESS
2:00 – 3:00 PM
So you have decided to incorporate additive into your manufacturing process. Now what? Should you purchase equipment or is a partnership with another facility a viable option? What about training? Hear our expert panelists discuss the resources that are available as you implement your additive manufacturing process. From funding to workforce development, get a complete guide to the best route for your business.

Moderator: Todd Grimm, President, T. A. Grimm & Associates, Inc.
Panelists:
Carl Dekker, President, Met-L-Flo
Dana Ellis, Senior Program Manager, National Center for Manufacturing Sciences (NCMS)
Federico M. Sciammarella, Ph.D., Interim Chair Mechanical Engineering Department, College of Engineering & Engineering Technology

NETWORKING EVENT

INDUSTRY NIGHT AT SOLDIER FIELD
5:30 – 7:30 PM
Enjoy an evening of fun, food, drinks and networking during our Industry Night Party at Soldier Field, home of the Chicago Bears. The evening will include exclusive access to Soldier Field and a meet-and-greet with retired Chicago Bears Hall of Famer Dan “Danimal” Hampton. Advance ticket price: $50

INDUSTRY NIGHT VIP EXPERIENCE: $75
As a VIP, get 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 special guest Dan “Danimal” Hampton.

Tickets can be purchased during the online registration process. VIP Experience – Limited to 200 participants
WEDNESDAY, NOVEMBER 8

WOMEN OF FABTECH BREAKFAST WITH TECH TOUR
7:30 – 10:30 AM
Join us for a networking breakfast celebrating the importance of women in the manufacturing sector. This event aims to foster relationships and dialogue between supporters and practitioners in the field. Includes a continental breakfast and tech tour on the show floor. Price: $25

KEYNOTE PRESENTATION

INSPIRING CREATIVITY IN THE WORKPLACE
8:30 – 9:30 AM
Matthew Luhn, Original Storyteller, Pixar
As one of the original story creators at Pixar Animation Studios, Matthew Luhn participated in building and sustaining the creative culture at Pixar from startup to the most successful filmmaking group in the history of Hollywood. Matthew’s engaging and action-oriented talk will provide strategies on how to create a culture that encourages and nurtures new ideas, and embraces fear and failing as a necessary part of the creative process. He demonstrates how to empower relationships and build trust through authentic communication.

EXPERT PANEL PRESENTATION

INNOVATIVE APPROACHES FOR WORKFORCE DEVELOPMENT & RECRUITING TALENT
12:30 – 1:30 PM
On a daily basis manufacturers face workforce shortages in key areas within their manufacturing operations. Those that engage with their communities — including technical high schools & colleges, manufacturing summer camps for youth, and Manufacturing Day celebrations — are ahead of the pack filling these positions. Attend and learn from manufacturers and educators how to benefit from these approaches to building a consistent workforce pipeline.

Moderator: Brad Beckner, Chicago Territory Vice President, KellyOCG
Panelists:
Warren Long, Commodity Manager, Briggs & Stratton Products Group
Mike Cattelino, Apprenticeship Manager, Fox Valley Technical College
Laura Elsner, Workforce Development Manager, DeWys Manufacturing

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MONDAY, NOVEMBER 6 – WEDNESDAY, NOVEMBER 8

PROFESSIONAL WELDING COMPETITION
During Show Hours in Hall C1
Professional welders can sign up onsite to compete for a $2,500 first prize, a $1,000 second prize, and a $500 third prize. Don’t miss the chance to cheer on competitors as they demonstrate their skills to earn the title of “Best Welder in America.” Contestants will make a single-pass SMAW weld with E7018 on low-carbon steel. Speed and quality will be the criteria. Announcement of winners at 10:30 AM on Wednesday, November 8.
EXHIBITS ONLY
Attendance is FREE if you register by November 3. Beginning November 4, the cost to attend the exhibits is $50. AWS, FMA, SME, PMA, and CCAI members may always attend the exhibits for FREE with a valid member card.

SPECIAL EVENTS
INDUSTRY NIGHT AT SOLDIER FIELD
TUESDAY, NOVEMBER 7
Advance ticket price for attendees is $50 and includes food and drinks, networking, and more at Soldier Field. VIP Experience Package available for $75 and includes a VIP tour of the Visitors Locker Room and football field.

WOMEN OF FABTECH BREAKFAST WITH TECH TOUR
WEDNESDAY, NOVEMBER 8
Tickets for FABTECH Attendees are $25 and include a continental breakfast.

EDUCATION PROGRAMS
3D/ADDITIVE MANUFACTURING, AUTOMATION/SMART MFG, CUTTING, FINISHING, FORMING & FABRICATING, LASERS, LEAN, MANAGEMENT, JOB SHOP, STAMPING, STRUCTURAL STEEL/PLATE, WORKFORCE DEVELOPMENT

<table>
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<th>PACKAGES (BUY MORE AND SAVE!)</th>
<th>MEMBER</th>
<th>NON-MEMBER</th>
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<tbody>
<tr>
<td>1 Session</td>
<td>$175</td>
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<tr>
<td>2 Sessions</td>
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<tr>
<td>3 Sessions</td>
<td>$405</td>
<td>$480</td>
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<tr>
<td>4 Sessions</td>
<td>$500</td>
<td>$600*</td>
</tr>
<tr>
<td>5 Sessions</td>
<td>$600</td>
<td>$725*</td>
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<tr>
<td><strong>Full Conference:</strong> (6 or more sessions)</td>
<td>$690</td>
<td>$840*</td>
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NOTE: The rate for the Laser Welding for Today’s Fabricator Workshop (Session AWF100) is $335 for Members and $420 for Non-Members.

* Non-Member rates for 4 or more sessions include a one-year complimentary membership to one of the co-sponsoring associations (FMA or SME only).

WELDING TRACK

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<tr>
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<th>MEMBER</th>
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<tbody>
<tr>
<td>1-Day AWS Educational Sessions</td>
<td>$150</td>
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<tr>
<td>1/2-Day Seminar or Workshop</td>
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<td>$420</td>
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<tr>
<td>1-Day Conference or Seminar</td>
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<tr>
<td>2-Day Conference or Seminar</td>
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<tr>
<td>2-Day RWMA Resistance Welding School</td>
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<tr>
<td>1-Day Professional Program</td>
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<tr>
<td>4-Day Professional Program</td>
<td>$225</td>
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<td>Student Professional Program</td>
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<td>AWS Awards Luncheon</td>
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<tr>
<td>AWS Prayer Breakfast</td>
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* Non-Member price for AWS Sessions only includes a one-year AWS Individual Membership.

b Non-Member Student Professional Program price includes a one-year AWS Student Membership.

CONFERENCE CANCELLATION POLICY: Cancellations must be made in writing and faxed to Attn: FABTECH Conference Cancellation at (313) 425-3407 no later than October 23, 2017 to receive a full refund minus a $50 administrative fee. Cancellations received after this date are non-refundable. Substitutions allowed.
ABOUT THE EDUCATION PROGRAM

The Fabricators & Manufacturers Association, Int’l (FMA), SME, Precision Metalforming Association (PMA), and Chemical Coaters Association International (CCAI) cosponsor the sessions on 3D/additive manufacturing, automation/smart mfg, cutting, finishing, forming & fabricating, job shop, lasers, lean, management, stamping, structural steel/plate, and workforce development. All sessions are two hours in length, offering practical knowledge you can use right away. Sessions with Tech Tours combine classroom instruction with expert-led guided tours on the show floor to see technology operating in designated booths.

The American Welding Society (AWS) presents a comprehensive lineup of welding education. Led by the industry’s top professionals, programs focus on best practices and new commercial developments in welding and thermal spray. Events include conferences, seminars, RWMA Resistance Welding School, professional program, society events, and more.

CONTINUING EDUCATION CREDITS

Individuals who attend AWS education programs are awarded 1 PDH (Professional Development Hour) for each hour of education program attendance. Individuals seeking FMA Recertification Credits will be awarded 2 credits for each conference session attended (forming & fabricating, cutting, or finishing tracks) plus an additional 2 credits for attending the show. Individuals who attend SME education programs may be eligible to receive 1 credit per hour attended toward their SME-managed recertification requirements.

MEMBERSHIP INFORMATION

Discounted rates for members are available on educational programs. Interested in becoming a member of AWS, FMA, SME, PMA or CCAI? Find details on each of the co-sponsor associations and membership benefits by visiting their websites today!

EXPERIENCE LEVELS

The Schedule-At-A-Glance on the following pages provides a quick reference to all the educational programs offered at FABTECH 2017. Note that you can use the following key to find the education that meets your needs.

- **BASIC** – Recommended for the attendee who is new to the industry or needs a refresher on the topic.
- **INTERMEDIATE** – Designed for the attendee who already has a basic understanding of the subject matter.
- **ADVANCED** – For the attendee with several years of experience who is seeking more in-depth information.
<table>
<thead>
<tr>
<th>Category</th>
<th>Time</th>
<th>SESSION</th>
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<tr>
<td><strong>TECHNOLOGY</strong></td>
<td>8:00 AM – 10:00 AM</td>
<td>F20: Fundamentals of 3D Additive Manufacturing for Fabricators A</td>
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<tr>
<td></td>
<td></td>
<td>F27: NEW Introduction to IIoT &amp; Strategies for Evaluating Industry 4.0 I</td>
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<td>F37: NEW Automation and Smart Machines: The Future of the Factory I</td>
</tr>
<tr>
<td><strong>AUTOMATION/SMART MFG</strong></td>
<td>10:30 AM – 12:30 PM</td>
<td>F21: NEW Automating in Cutting B</td>
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<td>F31: Comparative Cutting Systems with Tech Tour B</td>
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<td></td>
<td>1:30 PM – 3:30 PM</td>
<td>F20: Fundamentals of 3D Additive Manufacturing for Fabricators A</td>
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<td>F27: NEW Introduction to IIoT &amp; Strategies for Evaluating Industry 4.0 I</td>
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<td>F37: NEW Automation and Smart Machines: The Future of the Factory I</td>
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<tr>
<td><strong>FINISHING</strong></td>
<td></td>
<td>F20: Fundamentals of a Successful Powder Coating Operation B</td>
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<td>F27: NEW Introduction to IIoT &amp; Strategies for Evaluating Industry 4.0 I</td>
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<td>F37: NEW Automation and Smart Machines: The Future of the Factory I</td>
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<td><strong>FORMING &amp; FABRICATING</strong></td>
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<td>F18: Coi Processing: Leveling, Slitting and Best Practices I</td>
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<td>F19: Press Brakes for Engineers I</td>
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<td>F28: NEW Tube &amp; Pipe Cutting I</td>
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<td>F29: Roll Forming Basics and Justification I</td>
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<td>F38: NEW Panel Bending Technology I</td>
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<td>F39: NEW Pressure Cost Reduction I</td>
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<td><strong>JOB SHOP</strong></td>
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<td>F26: NEW The Importance of Scheduling, Traceability and Classifying Inventory for Manufacturers B</td>
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<td>F36: Activity-based Scheduling and Estimating for Profitability in the Job Shop I</td>
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<tr>
<td><strong>LASERS</strong></td>
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<td>F22: NEW Fiber Laser Cutting and Joining: Recent Advances in Technology, Tools and Applications E</td>
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<td>F24: NEW Lean Principle: Developing People and Processes IE</td>
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<td>F34: Lean Tools: A3 Thinking - Developing People &amp; Solving Problems IE</td>
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<td><strong>LEAN</strong></td>
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<td>F14: NEW Lean Principle: Strategic Planning and Organizational Alignment A</td>
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<td>F24: NEW Lean Principle: Developing People and Processes IE</td>
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<tr>
<td></td>
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<td>F34: Lean Tools: A3 Thinking - Developing People &amp; Solving Problems IE</td>
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<td><strong>MANAGEMENT</strong></td>
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<td>F15: NEW Today’s Digital and Inbound Marketing Strategies for Fabricators I</td>
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<td>F25: NEW Current Economy, Labor and Employment Update for Manufacturing A</td>
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<td>F35: NEW Achieving Supplier Success in Today’s Global Manufacturing Environment A</td>
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<tr>
<td><strong>STAMPING</strong></td>
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<td>F10: NEW Deep Draw Process Technology E</td>
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<td>F20: NEW Structural Steel Case Study E</td>
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<td>F33: NEW Managing Conflict and Delegation Strategies for Effective Leadership A</td>
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<td><strong>WORKFORCE DEVELOPMENT</strong></td>
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<td>F13: NEW Managing Complex Change: The Challenge of Implementing a Significant Improvement Initiative E</td>
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<td>F23: NEW Mission Critical Tackling the Manufacturing Skills Gap E</td>
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<td><strong>WELDING</strong></td>
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<td>F20: NEW Structural Steel Case Study E</td>
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<tr>
<td><strong>SEMINARS</strong></td>
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<td>W10: D1.1 - Structural Steel Code Clinic - 2015 8:30 AM 4:30 PM</td>
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<td>W11: What’s New in the 21st Edition of API 1104 8:30 AM 4:30 PM</td>
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<td><strong>CONFERENCES</strong></td>
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<td>W25: Thermal Spray Coatings – FREE 1:00 PM 5:00 PM</td>
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<tr>
<td><strong>PROFESSIONAL PROGRAM</strong></td>
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<td>W27: Session 1: Additive Manufacturing 2.00 PM 5:00 PM</td>
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<td>Session 2: Modeling 1 2.00 PM 5:00 PM</td>
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<td>Session 3: Friction Stir and Solid State Welding 2.00 PM 5:00 PM</td>
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<tr>
<td><strong>EDUCATIONAL SESSIONS</strong></td>
<td></td>
<td>W33: National Center for Welding Education and Training, Weld-Ed 9:00 AM 4:30 PM</td>
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<tr>
<td><strong>SPECIAL PROGRAMS</strong></td>
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<td>W35: AWS Prayer Breakfast 7:00 AM 8:30 AM</td>
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Notes: B = Basic, I = Intermediate, A = Advanced
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<tr>
<th>TECHNOLOGY</th>
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<th>10:30 AM – 12:30 PM</th>
<th>1:30 PM – 3:30 PM</th>
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<tr>
<td>3D/ADDITIVE MANUFACTURING</td>
<td><strong>F40</strong>: NEW Business Considerations for 3D Additive Technology with Tech Tour ✅</td>
<td><strong>F50</strong>: NEW Design Considerations for 3D Additive Technology ✅</td>
<td><strong>F60</strong>: NEW Considerations for Small to Large Additive 3D Printing ✅</td>
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<tr>
<td>AUTOMATION/SMArt MFG</td>
<td><strong>F47</strong>: NEW Automating with Laser Technology ✅</td>
<td><strong>F57</strong>: NEW Introduction to Smart Manufacturing and Asset Optimization in Real-Time ✅</td>
<td><strong>F67</strong>: NEW Robot-Based Automation Systems ✅</td>
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<tr>
<td>CUTTING</td>
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<td><strong>F61</strong>: Waterjet Cutting Solutions for Quality Cut and Speed ✅</td>
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<td>FINISHING</td>
<td><strong>C40</strong>: NEW Fundamentals of Pretreatment ✅</td>
<td><strong>C50</strong>: NEW Finishing End User Case Histories ✅</td>
<td><strong>C60</strong>: NEW Understanding the Importance of Wastewater Treatment ✅</td>
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<tr>
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<td><strong>C41</strong>: NEW Plating and Anodizing Industry Success Stories ✅</td>
<td><strong>C51</strong>: NEW Mejorando el Desempeño Total Del Sistema de Pintura en Polvo ✅</td>
<td><strong>C61</strong>: NEW Practical Approach to Optimal Powder Coating Operations ✅</td>
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<td><strong>C42</strong>: NEW Solving 21st Century Coating Challenges with Durable Porcelain Enamel ✅</td>
<td><strong>C52</strong>: NEW Finishing System Design Criteria ✅</td>
<td><strong>C62</strong>: NEW Optimizing Liquid Finishes ✅</td>
</tr>
<tr>
<td>FORMING &amp; FABRICATING</td>
<td><strong>F48</strong>: Tube Producing and Joining ✅</td>
<td><strong>F58</strong>: Advanced Roll Forming Tooling and Line Troubleshooting ✅</td>
<td><strong>F68</strong>: Press Brake Tooling ✅</td>
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<td></td>
<td><strong>F49</strong>: Advanced Punching Capabilities for Fabricators ✅</td>
<td><strong>F59</strong>: Advanced Press Brake Technology ✅</td>
<td><strong>F69</strong>: Steel 101: Mill to Fabricator ✅</td>
</tr>
<tr>
<td>JOB SHOP</td>
<td><strong>F46</strong>: NEW Cracking the Paperless Code for Manufacturers ✅</td>
<td><strong>F56</strong>: NEW Lean Manufacturing Journey Through the Job Shop ✅</td>
<td><strong>F66</strong>: NEW Leverage Real-Time Costs and Double Output ✅</td>
</tr>
<tr>
<td>LASERS</td>
<td><strong>AWF100</strong>: Laser Welding for Today’s Fabricator Workshop ✅</td>
<td></td>
<td><strong>F62</strong>: NEW Innovative Laser Application and Solutions ✅</td>
</tr>
<tr>
<td>LEAN</td>
<td><strong>F44</strong>: Lean: Value Stream Mapping Addressing Differences Between Office and Shop Floor ✅</td>
<td><strong>F54</strong>: Lean Tools: Flow and Pull Creating Flow in High-Variety Environments ✅</td>
<td><strong>F64</strong>: Lean Tools: Quick Changeover and Total Production Maintenance (TPM) ✅</td>
</tr>
<tr>
<td>MANAGEMENT</td>
<td><strong>F45</strong>: NEW Global Landscapes and Cultural Awareness for Competitive Advantage ✅</td>
<td><strong>F55</strong>: NEW Accelerate Profitability Through Cost Reduction Strategies ✅</td>
<td><strong>F65</strong>: NEW Innovative Strategies for Leading, Protecting and Growing Your Organization ✅</td>
</tr>
<tr>
<td>STAMPING</td>
<td><strong>S40</strong>: NEW Press Line Optimization ✅</td>
<td><strong>S50</strong>: NEW Machine Modernization &amp; Safeguarding ✅</td>
<td><strong>S60</strong>: NEW Equipment Installation ✅</td>
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<tr>
<td></td>
<td><strong>S41</strong>: Cutting &amp; Punching Technology ✅</td>
<td><strong>S51</strong>: Lubrication Technology ✅</td>
<td><strong>S61</strong>: NEW Transfer Die Technology ✅</td>
</tr>
<tr>
<td>STRUCTURAL STEEL/PLATE</td>
<td><strong>F300</strong>: NEW Structural Fabrication Equipment Technology ✅</td>
<td></td>
<td><strong>F400</strong>: NEW Structural Steel Software Solutions ✅</td>
</tr>
<tr>
<td>WORKFORCE DEVELOPMENT</td>
<td><strong>F43</strong>: NEW Leadership Actions to Transform Your Culture and Create Employee Engagement ✅</td>
<td><strong>F53</strong>: NEW Strategies for Learning and Leveraging Your Leadership ✅</td>
<td><strong>F63</strong>: Accelerating Workforce Performance Through Best Practices in Learning &amp; Development ✅</td>
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<tr>
<td>WELDING</td>
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<tr>
<td>SEMINARS</td>
<td><strong>W12</strong>: Crash Course of Welding Inspection Technology Seminar (WIT) 8:30 AM 4:30 PM</td>
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<td></td>
<td><strong>W13</strong>: The Why and How of Welding Procedure Specifications - Beginner 8:00 AM 12:00 PM</td>
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<tr>
<td></td>
<td><strong>W14</strong>: The Why and How of Welding Procedure Specifications - Advanced 1:00 PM 5:00 PM</td>
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<tr>
<td>RWMA SCHOOL</td>
<td><strong>W15</strong>: The Why and How of Welding Procedure Specifications - Both 8:00 AM 5:00 PM</td>
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<tr>
<td></td>
<td><strong>W16</strong>: Applications of Stainless Steel Welding - Day 1 8:30 AM 4:30 PM</td>
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<td></td>
<td><strong>W17</strong>: ASME Section IX, B31.1 &amp; B31.3 Code Clinic - Day 1 8:30 AM 4:30 PM</td>
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<tr>
<td>PROFESSIONAL PROGRAM</td>
<td><strong>W24</strong>: Tubular Structures Conference 8:00 AM 3:00 PM</td>
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<td></td>
<td><strong>W26</strong>: RWMA Resistance Welding School - Day 1 8:00 AM 5:00 PM</td>
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<td></td>
<td><strong>W28</strong>: Session 4: Arc Welding 8:00 AM 12:00 PM</td>
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<td><strong>Session 5</strong>: Welding Metallurgy &amp; Weldability 8:00 AM 12:00 PM</td>
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<td></td>
<td><strong>Session 6</strong>: Honorary Symposium for Dr. S. David and Prof. T. DebRoy - Joint Session A 8:00 AM 12:00 PM</td>
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<td></td>
<td><strong>Session 7</strong>: Industrial Technologies 2:00 PM 5:00 PM</td>
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<td></td>
<td><strong>Session 8</strong>: Honorary Symposium for Dr. S. David - Session B 2:00 PM 5:00 PM</td>
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<td></td>
<td><strong>Session 9</strong>: Honorary Symposium for Prof. T. DebRoy - Session B 2:00 PM 5:00 PM</td>
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<tr>
<td>EDUCATIONAL SESSIONS</td>
<td><strong>W34</strong>: AWS Education Sessions 8:30 AM 4:00 PM</td>
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<tr>
<td>SPECIAL PROGRAMS</td>
<td><strong>W36</strong>: AWS Awards Luncheon 12:00 PM 2:00 PM</td>
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## WEDNESDAY, NOVEMBER 8

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<thead>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>AUTOMATION/SMART MFG</td>
<td>F77: NEW Robotic Joining Cells and Mass Production</td>
<td>F87: NEW Smart Manufacturing Execution System and Continuous Improvement Solutions</td>
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<tr>
<td>CUTTING</td>
<td>F71: NEW New Technology in Plasma Cutting for Fabricators</td>
<td>F81: NEW Advanced Cutting Tools, Applications and Software for Productivity</td>
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<tr>
<td>FINISHING</td>
<td>C70: NEW Managing Perceptions for Your Finishing Business</td>
<td>C60: NEW Achieving Consistent Quality Finishes</td>
<td>C90: Efficient Curing with Infrared</td>
</tr>
<tr>
<td>FORMING &amp; FABRICATING</td>
<td>F78: NEW Tube &amp; Pipe Bending 101</td>
<td>F88: Roll Form Tooling Installation, Troubleshooting and Lubricants</td>
<td>F98: Tube Laser Processing 101</td>
</tr>
<tr>
<td>MANAGEMENT</td>
<td>F75: NEW Innovation, The Art of Being Wrong</td>
<td>F85: NEW Succession &amp; Exit Planning for the Next Generation of Metal Fabricators</td>
<td>F95: NEW How to Develop and Manage a Reshoring Project</td>
</tr>
<tr>
<td>STAMPING</td>
<td>S70: NEW Metal Stamping Fundamentals</td>
<td>S80: NEW Manufacturing ROI &amp; Tax Credits</td>
<td>S90: NEW Understanding Metal Stamping Presses</td>
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<tr>
<td>STRUCTURAL STEEL/PLATE</td>
<td>F500: NEW Steel Beam Assembly Technology</td>
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<tr>
<td>WORKFORCE DEVELOPMENT</td>
<td>F73: NEW Attract, Develop and Build a High Performance Millennial Team</td>
<td>F83: NEW Six Keys to Team Leadership and Effective Workplace Teams</td>
<td>F93: NEW Communicate, Build Accountability and Conduct Meaningful Evaluations in Your Organization</td>
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## WELDING

<table>
<thead>
<tr>
<th>SEMINARS</th>
<th>8:30 AM – 3:30 PM</th>
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<tbody>
<tr>
<td>W16:</td>
<td>Applications of Stainless Steel Welding - Day 2 8:30 AM – 4:30 PM</td>
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<tr>
<td>W17:</td>
<td>ASME Section IX, B31.1 &amp; B31.3 Code Clinic - Day 2 8:30 AM – 4:30 PM</td>
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<tr>
<td>W18:</td>
<td>Ethics Seminar for Certified Welding Inspectors - Part A 8:00 AM – 12:00 PM</td>
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<tr>
<td>W19:</td>
<td>What to Expect as a New Certified Welding Inspector - Part B 1:00 PM – 5:00 PM</td>
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<tr>
<td>W20:</td>
<td>Ethics Seminar for Certified Welding Inspectors &amp; What to Expect as a New Certified Welding Inspector (Part A &amp; B) 8:00 AM – 5:00 PM</td>
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<tr>
<td>W21:</td>
<td>The Visual Inspection Workshop 8:30 AM – 4:30 PM</td>
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<tr>
<td>W22:</td>
<td>Fundamentals of Liquid Penetrant Testing for CWIs and Quality Assurance Personnel 8:30 AM – 4:30 PM</td>
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## RWMA SCHOOL

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<tr>
<th>RWMA SCHOOL</th>
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<tbody>
<tr>
<td>W26:</td>
<td>RWMA Resistance Welding School - Day 2 8:00 AM – 4:15 PM</td>
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## PROFESSIONAL PROGRAM

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<tr>
<th>PROFESSIONAL PROGRAM</th>
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<tbody>
<tr>
<td>W29: Session 10: Plenary Session 8:00 AM – 9:30 AM</td>
<td>Session 11: Laser Welding/Additive Manufacturing 9:40 AM – 12:00 PM</td>
</tr>
<tr>
<td>Session 12: Honorary Symposium for Dr. S. David - Session C 9:40 AM – 12:00 PM</td>
<td>Session 13: Honorary Symposium for Prof. T. DebRoy - Session C 9:40 AM – 12:00 PM</td>
</tr>
<tr>
<td>Session 14: Overlay and Cladding 2:00 PM – 5:00 PM</td>
<td>Session 15: Dissimilar Joining 2:00 PM – 6:00 PM</td>
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<tr>
<td>Session 16: Honorary Symposium for Dr. S. David and Prof. T. DebRoy - Joint Session D 2:00 PM – 6:00 PM</td>
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<tr>
<td>Schedule At-A-Glance</td>
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<tr>
<td><strong>TECHNOLOGY</strong></td>
<td>8:00 AM – 10:00 AM</td>
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<tr>
<td><strong>AUTOMATION/SMART MFG</strong></td>
<td>F107: NEW Standards and Air Quality for Risk Assessment in Your Automation</td>
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<tr>
<td><strong>FINISHING</strong></td>
<td>C100: NEW The ULTIMATE Powder Coating</td>
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<tr>
<td><strong>FORMING &amp; FABRICATING</strong></td>
<td>F108: NEW Tube &amp; Pipe Forming</td>
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<tr>
<td><strong>JOB SHOP</strong></td>
<td>F106: Sales 101 For The Fabrication Industry</td>
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<td><strong>LEAN</strong></td>
<td>F104: Lean Tools: Preventative Maintenance and Sustainable Techniques &amp; Life Cycle Assessments</td>
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<tr>
<td><strong>MANAGEMENT</strong></td>
<td>F105: NEW Increasing Organizational Readiness and Agility in Your Company</td>
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<tr>
<td><strong>STAMPING</strong></td>
<td>S100: NEW Advancements in Press Technology</td>
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<td><strong>STRUCTURAL STEEL/PLATE</strong></td>
<td>S101: NEW Optimizing Sensor and Lubricant Applications</td>
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<tr>
<td><strong>WORKFORCE DEVELOPMENT</strong></td>
<td>S101: NEW Optimizing Sensor and Lubricant Applications</td>
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<tr>
<td><strong>WELDING</strong></td>
<td>F103: NEW 6 Steps to Hiring and The New Gig Economy</td>
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<tr>
<td><strong>SEMINARS</strong></td>
<td>W23: Fundamentals of Radiographic Inspection for CWI’s and Quality Assurance Personnel</td>
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<tr>
<td><strong>PROFESSIONAL PROGRAM</strong></td>
<td>W30: Session 17: Sensing and Control</td>
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<td><strong>SPECIAL PROGRAMS</strong></td>
<td>Session 18: Modeling II</td>
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<tr>
<td><strong>AWS Certification Information Session: Move to Computer-based Testing (CBT) and Other Topics - FREE</strong></td>
<td>9.00 AM 12.00 PM</td>
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<tr>
<td><strong>AWS Certification Exam (advance application required)</strong></td>
<td>7.00 AM 6.00 PM</td>
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Zoom, Zoom with Mitsubishi Laser

Mitsubishi Laser is the only company with ZOOM™ Fiber technology. Our all in one ZOOM™ Fiber head design allows our ZOOM™ series to be the most versatile laser cutting machines available. Visit mcmachinery.com today or call 888-738-5772 for a complete overview on ZOOM™ Technology.

MC Machinery's product line includes Laser, Milling, Press Brake, Turning, EDM, and Additive Machines.

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Follow us on Twitter @mc_mits
MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM
F20: FUNDAMENTALS OF 3D ADDITIVE MANUFACTURING FOR FABRICATIONS

Review the fundamental practices for modeling and fabricating parts with AM. Learn about the latest equipment and material cost-benefit analyses taking place in the industry. New design and software rules and limitations, intellectual property issues and the difficulties associated with business case justifications will be discussed.

Fundamentals of Additive Manufacturing
Sheku Kamara – Milwaukee School of Engineering

Expanded Applications for Additive Manufacturers
Carl Dekker – Met-L-Flo Inc.

1:30 PM – 3:30 PM
F30: NEW! FUNDAMENTALS OF 3D ADDITIVE SCANNING AND IMAGING

3D Scanning and Imaging continue to change the way we think about Additive Manufacturing. Gain a comprehensive introduction to 3D technologies, software and processes. This session also covers reverse engineering and how it can be used to address many other engineering functions.

Reverse Engineering: A How To
Greg Groth – Exact Metrology

Fundamentals of Additive Manufacturing Part 2
Carl Dekker – Met-L-Flo Inc.

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM
F40: NEW! BUSINESS CONSIDERATIONS FOR 3D ADDITIVE TECHNOLOGY WITH TECH TOUR

Fabricators find themselves trying to understand the business case for 3D Additive Manufacturing. This session will cover careful consideration of the direct costs that drive Additive Manufacturing and traditional production. The attendee will also gain knowledge of funding for using high performance computing to innovate processes. Experts will lead a tech tour to the additive pavilion to see some hands on technology.

Business Considerations for 3D Additive
Carl Dekker – Met-L-Flo Inc.

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM
F50: NEW! DESIGN CONSIDERATIONS FOR 3D ADDITIVE TECHNOLOGY

This session will highlight key elements that the designer should consider when creating components and parts for 3D printing. Hear our experts discuss the right process for your business needs. By addressing concerns early in the design phase, you can eliminate issues further downstream in the manufacturing process.

Making Sense of Additive Manufacturing – A Guide to Select the Right Process
Frank Geyer – TRUMPF Inc.

Designing for the DMLS Process
Jonathan Bissmeyer – Proto Labs

1:30 PM – 3:30 PM
F60: NEW! CONSIDERATIONS FOR SMALL TO LARGE ADDITIVE 3D PRINTING

Which is right for you? Our experts will discuss SAAM (small area additive manufacturing) and BAAM (big area additive manufacturing). When to justify for prototyping, large or small parts in production and which option is best for your operation will be discussed.

Justifying a Shared 3D Printer for Manufacturers
Chris Haid – New Valence Robotics Corp.

Question Everything: BAAM (Big Area Additive Manufacturing) Technology and the Future of Additive Manufacturing
Rick Neff – Cincinnati Inc.

10:30 AM – 12:30 PM
F70: NEW! 3D ADDITIVE FOR METALS, TOOLS AND CASTINGS

This session will focus on emerging technologies that are being utilized to produce cast components, and will cover aspects of 3D printing for the metal casting industry. Learn how to incorporate in your business and practical information on 3D for metals, tools and castings.

An Introduction to 3D Sand Printing for the Metalcasting Industry
Steven Murray – Hoosier Pattern
3D/ADDITIVE MANUFACTURING

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F70: NEW! 3D ADDITIVE FOR METALS, TOOLS AND CASTINGS (CONT’D) B

How to Use 3D Printed Sand in Short Run Production and Prototype Castings
Steven Murray – Hoosier Pattern

Additive Manufacturing for Your Metal Forge Tools
Steven Murray – Hoosier Pattern

10:30 AM – 12:30 PM

F80: NEW! 3D ADDITIVE APPLICATIONS FOR FABRICATORS I

Hear about some 3D Additive applications and making sense of metal 3D printing. The session will begin with an overview and go into more complex applications on building a digital twin of additive. The session will also touch on monitoring with embedded sensors for 3D printing.

Making Sense of Metal 3D Printing
Cullen Hilkene – 3Diligent

Building a Digital Twin of Additive Manufacturing
Gerald Knapp – Pennsylvania State University

Health Monitoring with Embedded Sensors Produced Through Metal 3D Printing
Mark Norfolk – Fabrisonic

AUTOMATION/SMART MFG

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F27: NEW! INTRODUCTION TO IIOT & STRATEGIES FOR EVALUATING INDUSTRY 4.0 I

How can small–to–mid–sized fabricators stay competitive in this age of small batches, short lead times and increased part complexity? How does a company take the first step to Industry 4.0? This presentation will help fabricators navigate the Industry 4.0 landscape. In particular, an overview of strategy and practical system planning for data capture and analytics for existing and future products will be covered. The session will also discuss each part of the ecosystem and how they fit together to form a complete and compelling solution.

Introduction to IIoT Strategy for Industrial Machines
Robert Waldrop – Tailor Made Tech

Evaluating Industry 4.0 Principles
Kurt Debbaut – LVD Company

The Internet of Things Is an Ecosystem
Not a Platform
Bryan Sapot – SensrTrx

1:30 PM – 3:30 PM

F37: NEW! AUTOMATING AND SMART MACHINES: THE FUTURE OF THE FACTORY I

There has been a lot of discussion recently regarding the future of machine technology. The purpose of this session is to define what actually makes a machine smart and what technologies on the horizon will alter the future of the industry. This session will also explore how predictive algorithms are helping to extend equipment and filter life, minimize energy consumption, minimize maintenance burden and reduce total costs of ownership for air quality control.

Cutting Through the Noise: What’s Really in Store for Smart Machines
Ashish Patwardhan – Schneider Electric

Automating the Factory Environment
Jim Reid – ReboVent Solutions Group

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F47: NEW! AUTOMATING WITH LASER TECHNOLOGY I

The power and processing speed of lasers has increased substantially over the past few years and current market offerings enable much higher part production rates than ever before. This presentation will touch on the concepts of rethinking laser cutting operations and designing complete process solutions to enable higher throughput with less effort and labor.

The Requirement for Automating High Powered Fiber Lasers for Maximum Output
Brendon DiVincenzo – Bystronic Inc.

Robotic Laser Cutting with High–Path–Accuracy, Articulated Robot
Mike Monnin – OTC Daihen, Inc.

New Robotic Laser with Direct Pulse Control Offers High Frequency Control Based on the Robot Position and Process Speed
Michael Sharpe – FANUC America Corp.
10:30 AM – 12:30 PM
F57: NEW! INTRODUCTION TO SMART MANUFACTURING AND ASSET OPTIMIZATION IN REAL-TIME

This session will break down the basics of smart manufacturing and discuss simple decisions you can make today to start enabling your factory for flexible manufacturing & efficient production. This session will also focus on trends, distributed sensors and machine learning systems that provide predictive maintenance and optimal allocation of assets on a real–time basis.

An Introduction to Smart Manufacturing, IIoT, Industry 4.0 & Why You Should Care
Will Healy, III. – Balluff Inc.

Smart Factory in Practice: Using Machine Learning for Asset Optimization
Rob Dolci – Aizoon

Drones, Wearables & VR: Manufacturing Hype or Reality?
Derek Ochs – Exact, Macola Division

1:30 PM – 3:30 PM
F67: NEW! ROBOT–BASED AUTOMATION SYSTEMS

This session will explore how the robotics industry functions, why to choose robot based automation, principles of automation systems, general principles of robot technology, the business case for automation and the 10 common mistakes made in Robot Integration.

Bob Rochelle – Gudel Inc.

WEDNESDAY, NOVEMBER 8
8:00 AM – 10:00 AM
F77: NEW! ROBOTIC JOINING CELLS AND MASS PRODUCTION

Traditional robots vs. collaborative robots, turning manual welding into mass production with robots, weld splatter elimination, synchronized wire feeding and a GMAW–WP weld power source and systems for wire parts will all be discussed in this session.

Traditional Robots vs. Collaborative Robots
Gary Bartz – ARC Specialties, Inc.

How to Turn Your Manual Welding Operation into Mass Production with Robotic Welding Cells
Mike Monnin – OTC Daihen, Inc.

Weld Spatter Elimination Through the Marriage of Robotics, Synchronized Wire Feeding and a GMAW–WP Weld Power Source
Mike Monnin – OTC Daihen, Inc.

10:30 AM – 12:30 PM
F87: NEW! SMART MANUFACTURING EXECUTION SYSTEM AND CONTINUOUS IMPROVEMENT SOLUTIONS

Enterprise Resource Planning (ERP) and Manufacturing Execution System (MES) Solutions hold promise for improving accuracy and accessing previously untapped treasures of production information. Attend this session and make the move towards achieving your business and production goals. Successful digital transformation examples will be presented and discussed. You will leave this session with actionable insight and a clear pathway to next steps for optimal results.

Winning Management Buy-In for a Smart MES Shop Floor Operations Management System
Mike LeRoy – Paper–Less, LLC

Successful Manufacturers Moving from Paper and Excel Spreadsheets to the New Digital Frontier
Ann Krauss – Paper–Less, LLC

1:30 PM – 3:30 PM
F97: NEW! AGILE DESIGN AND SYNCHRONIZED MANUFACTURING FOR REAL TIME DECISION-MAKING

New cloud–based CAD technologies are being introduced that increase collaboration, allow faster iteration, and reduce errors. In this session, we will explore the new technologies and explain how they are enabling new Agile Design Processes. The session will also cover traceability and real–time decision making in the manufacturing process by implementing a leading–edge manufacturing execution system (MES).

Harnessing the Power of Synchronized Manufacturing
Kevin Power and Rohan Palshikar – Tata Technologies

Agile Design Processes Using Cloud-Based Engineering Tools
Darren Henry – Onshape
THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F107: NEW! STANDARDS AND AIR QUALITY FOR RISK ASSESSMENT IN YOUR AUTOMATION

In recent years, innovations in industrial automation and control systems have advanced automated manufacturing with innovative and sophisticated designs. This interactive session will cover the standards (ANSI B11.20, ISO 11161) for integrated manufacturing systems (IMS) and cover the basics of air quality evaluation, mitigation and monitoring for metalworking and fabricating plants.

Integrated Manufacturing Systems – Risk Assessment & Zone Determination by Layout Analysis
Mark Nehrkorn – SICK Product & Competence Center Americas LLC

Indoor Air Quality: How Clean Is Clean Enough?
Jim Reid – RoboVent Solutions Group

AUTOMATION/SMART MFG

TUESDAY, NOVEMBER 7

1:30 PM – 3:30 PM

F61: WATERJET CUTTING SOLUTIONS FOR QUALITY CUT AND SPEED

This session will focus on the latest advancements and solutions using waterjet technology. Multi-Pass abrasive recycling and the impact on recovery for speed and quality will be covered.

Waterjet Solutions for Fabricators
Brian Sherick – Flow International

Arion Vandergon – Hypertherm Inc.

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F71: NEW! TECHNOLOGY IN PLASMA CUTTING FOR FABRICATORS

This session will serve as a guide to new technology in plasma cutting. Understand the industry, hole cutting, and robotic plasma cutting of structural steel fabrication.

New Technology Frontiers in Plasma Cutting Technology
Phillip Parker – Hypertherm Inc.

Allan Holst – Park Industries

10:30 AM – 12:30 PM

F81: NEW! ADVANCED CUTTING TOOLS, APPLICATIONS AND SOFTWARE FOR PRODUCTIVITY

Build your foundation with advanced nesting software and learn multiple processes to eliminate re-work and secondary handling. Other cutting tools such as integration of pierce detection within fiber laser and cutting band saw application will be discussed.

Advanced Nesting Software: Building Your Foundation for Productivity & Success
Derek Weston – Hypertherm Inc.
Multiple Processing to Increase Productivity and Eliminate Secondary Handling and Re-work
Dave Maxham – Soitaab Usa

Integration of Pierce Detection Within Fiber Lasers
Stuart McCulloch – SPI Lasers

Cutting Fluid Application in Band Saw Application
Chandra Sekhar Rakurty – The M. K. Morse Company

FINISHING
MONDAY, NOVEMBER 6
10:30 AM – 12:30 PM
C20: FUNDAMENTALS OF A SUCCESSFUL POWDER COATING OPERATION

Whether you are planning on converting from an existing liquid paint system, or getting into powder coating from scratch, there are essential elements required to ensure your best chance of success. This presentation will discuss the requirements of a well-designed, high-performing powder coating system, from pretreatment, powder material selection to powder application and recovery, to curing.

C21: FUNDAMENTALS OF A SUCCESSFUL ELECTROCOAT OPERATION

Electrocoat is the process of using an electrical field to migrate charged colloidal particles onto an oppositely charged conductive electrode. It is a highly efficient process that offers many functional and performance features. This session will review how the process works, when electrocoat is a good choice, technology options, how to control costs and maximize the efficiency of the system, and basic troubleshooting.
Gary Orosz – PPG Industries

C22: NEW! RACK-UP PROFITS WITH PRODUCTIVITY AND EFFICIENCY

This session will present the process for developing proper hang methods and rack design to maximize line density, material handling concepts to reduce labor costs and establishing safety guidelines and parameters for compliance. The second half of this session will explain the importance of part grounding and evaluate film build consistency as a function of ground quality. The benefits of proper hook & rack maintenance as well as implementation of stripping systems to provide in-line, on-line rack stripping will be reviewed along with new process techniques to reduce required line space for in-line stripping systems.

Rack up Profits with Productivity and Efficiency
Scott Rempala – Mighty Hook

Improve Your Coating Quality with Clean Hooks and Racks
James Malloy – Kolene Corporation

1:30 PM – 3:30 PM
C30: NEW! FUNDAMENTALS OF A SUCCESSFUL LIQUID COATING OPERATION

A liquid coating operation consists of many moving parts with multiple variables. This session contains several key components to managing a successful liquid coating operation. It will highlight how finishers can cut compressed air consumption in a mix room by 75% without an enormous capital investment. It will also focus on simple, quick actions to ensure you have quality going into and out of your finishing operation. Finally, it will review the basic knowledge base of liquid application equipment including the complete range of application technology from all aspects of manual applicators, automatic applicators and rotary atomizers.

Reducing Compressed Air Usage in Paint Kitchens
Michael Elberson – Autoquip Automation

Quality In — Quality Out
Dan Szczepanik – Sherwin-Williams Product Finishes

Building a Knowledge Base of Liquid Application Equipment Technology
Judith Lietzke – Carlisle Fluid Technologies

C31: NEW! FUNDAMENTALS OF PLATING AND ANODIZING

This session covers the basics of plating and anodizing which includes equipment design, racking, loading and cleaning metal parts, electrified processes and post processes for both technologies. It will also include an overview of the electroplating process with discussion of basic functional and decorative electroplated coatings. Attendees will also hear about a new type of chemistry that will eliminate process steps, reduce processing time, and reduce energy consumption.

Anodizing and Plating Basics
Mark Norton – PriceWalgren

The Basics of Electroplating
Blair Vandivier – Asterion, LLC

Aluminum Surface Preparation Made Easy
Mike Valenti – Hubbard–Hall
FINISHING

MONDAY, NOVEMBER 6
1:30 PM – 3:30 PM
C32: NEW! BLASTING YOUR WAY TO SUCCESSFUL METAL PREPARATION
It’s important to understand all variables involved in surface preparation. This session will review advantages and disadvantages for attendees to gain a full understanding when blasting can be most effective for metal surface preparation. It will cover the basics of centrifugal wheel blasting, blast equipment and conveying parts. Attendees will also learn the basics of air powered abrasive blasting and ways to reduce costs associated with this process. There will also be an introduction of automation in air abrasive blasting through the use of robotics.

Understanding the Benefits of Centrifugal Wheel Blasting
Carl Panzenhagen – Blast Cleaning Technologies

Abrasive Blasting: Best Practices, Cost Savings and Automation
Brian Kenimer – Blast–One International

TUESDAY, NOVEMBER 7
8:00 AM – 10:00 AM
C40: NEW! FUNDAMENTALS OF PRETREATMENT
This session will review a variety of key elements to consider in your pretreatment process. Learn about reverse osmosis water treatment as well as its applications, advantages and disadvantages. There will also be a segment on controlling the cleaning and pretreatment process, which is critical to achieving superior results. Knowing what parameters to control helps to prevent rejects and free up manpower for other processes. Receive a basic framework of fundamentals for cleaning and pretreatment, with emphasis on cleaning methods and pretreatment types. Understanding these concepts is essential to operating a high-quality finishing operation.

Reverse Osmosis Basics
Abigail Grommet – Therma-Tron-X, Inc.

Process Control for the Cleaning and Prepaint Industries
Robert Bodak – Chemetall US, Inc. – now part of BASF Group

Basics of Cleaning and Pretreatment — Keys for Success in the Modern Coating Shop
David Chalk – DuBois Chemicals

C41: NEW! PLATING AND ANODIZING INDUSTRY SUCCESS STORIES
This session consists of three presentations that will address successful case histories in the plating and anodizing industry. Attendees will learn how to identify the bottleneck in zinc–nickel plating while improving quality and service to the end user. Learn how to identify a market need and design a system to meet that need, as well as discuss challenges and non-traditional solutions. There will also be a presentation from an end user describing the planning, implementation and operation of a newly installed anodizing line.

If You Build It, They Will Come: The King Kong of Zinc Plating Lines
George Gatto, Jr. – Gatto Industrial Platers, Inc.

Automated Aluminum Anodizing for Exterior Automotive Applications
Richard Macary – Arlington Plating Company

C42: NEW! SOLVING 21ST CENTURY COATING CHALLENGES WITH DURABLE PORCELAIN ENAMEL
This presentation will encompass the technology of porcelain enameling. It will include the base metals (steel, cast iron and aluminum), basic design criteria, enamel frit, coating processes (powder and wet), firing/furnaces, troubleshooting and defect analysis. The general features and benefits of porcelain enamel will be discussed along with a review of typical products. Emerging new products and technologies will also be shared.

Cullen Hackler – Porcelain Enamel Institute

10:30 AM – 12:30 PM
C50: NEW! FINISHING END USER CASE HISTORIES
This session highlights three case histories:
1. An overview of a bicycle manufacturer’s re-shoring efforts including focus on their “dual coat” powder coating process. 2. The various application systems needed to finish many different types of doors along with the types of coatings applied. 3. Firsthand experience to successfully powder coat over hot-dip galvanized steel, including the proper procedures that must be followed to prepare new and weathered zinc-coated surfaces.

Bicycle Manufacturing Gears up with Powder Coating
Jeffrey Hale – Gema USA Inc.

Not All Doors Are Finished the Same Way
Steve Romer – SAMES–KREMLIN, Inc.

Lessons Learned in Powder Coating over Hot-Dip Galvanized Steel
Joe Langemeier – AZZ Metal Coatings
C51: NEW! MEJORANDO EL DESEMPEÑO TOTAL DEL SISTEMA DE PINTURA EN POLVO

El eficiente desempeño de un Sistema de Pintura en Polvo se compone de dos áreas principales: Pretratamiento y Aplicación del acabado. Los dos presentan retos para el ahorro los cuales serán tratados en esta capacitación. Cómo puedo aumentar mi producción y conseguir buen recubrimiento. Como mejorarla, Mantenimiento de herramientas, el eslabón perdido. Respuestas a estas preguntas y muchas más en esta sesión.

Antonio Tapia – Coral Chemical Company and Arturo Mercado – AkzoNobel

C52: NEW! FINISHING SYSTEM DESIGN CRITERIA

This session will consist of an overview of cost drivers in designing and installing a finishing system; a complete synopsis of the process considerations that affect capital and operational costs while meeting production, flexibility, and quality goals, including a case study of an actual finishing system acquisition; and a review of the latest in overhead conveyor technology for paint systems, friction-driven conveyors. There will also be examples of how friction-driven conveyors, teamed with smart controls, offer flexibility and expandability options.

Cost Considerations for a Finishing Line
Jason Gatton – Pneu-Mech Systems Mfg LLC

A Case Study Judging the Feasibility of Purchasing a New Finishing System
Nicholas Liberto – Powder Coating Consultants

Future of Finishing — Designing Your Paint System for the Unknown
Joshua Gilmore – IntelliFinishing

1:30 PM – 3:30 PM

C60: NEW! UNDERSTANDING THE IMPORTANCE OF WASTEWATER TREATMENT

This session covers important matters concerning wastewater treatment. Contaminant classification is critical to keeping industrial discharges legal & optimizing aqueous cleaning solution effectiveness. Presentations will cover defining sources, basic oil/sol removal, membrane filtration and other conservation techniques. Attendees will learn about the changes in rules and regulations concerning phosphates in wastewater discharges; why phosphates are bad for the environment and how to ensure you meet your discharge permit requirements; how surcharges work and why they are in place, and future trends in phosphate regulations. Learning how wastewater systems work and why they are important is critical for any finishing operation.

Be Nice to Mother Earth! Remove Oils & Soils from Your Wastewater; Recycle Your Aqueous Cleaning Solutions
Raymond Graffia, Jr. – The Arbortech Corp.

Where the EPA Stands on Phosphates in Wastewater
Robin Deal – Hubbard-Hall

Understanding Waste Treatment and Why It’s Important to Your Company
Al Enrique – Coral Chemical Company

C61: NEW! PRACTICAL APPROACH TO OPTIMAL POWDER COATING OPERATIONS

This session will cover an overview of the preventive maintenance process as it relates to powder coating and then go in-depth on troubleshooting powder coating related issues. Attendees will take away many great ideas and recommendations regarding the preventive maintenance process. It will also review methods used to activate the powder prior to transportation; vibration, stirring, and the most common-fluidization method. The presentation, will review the effect fluidization has on the overall application process, and steps to achieve greater efficiency.

Preventive Maintenance and Troubleshooting of Powder Coating Operations
John Cole – Parker Ionics and Mike Wittenhagen – TCI Powder Coatings

Effects of Fluidization on the Spray Application of Powder Coating
Jeffrey Hale – Gema USA Inc.

C62: NEW! OPTIMIZING LIQUID FINISHES

One presentation in this session will compare changes to component ratio and cure schedule using cyclic corrosion testing to determine if improvements to performance can be made beyond that of the recommended ratio and cure. Another presentation will review how defects can be reduced or eliminated by holding paint temperature within a narrow window. Also, how to turn temperature into a tool that can actively improve application results and increase first-pass yield. The last presentation will explain how to optimize a liquid coating operation including a variety of elements to increase productivity while maintaining the highest quality finished product.

The Study of 2k Paint and How Variations in Cure Effect Performance
P. Andrew Bias – Henkel Corp.
FINISHING

TUESDAY, NOVEMBER 7

1:30 PM – 3:30 PM

C62: NEW! OPTIMIZING LIQUID FINISHES (CONT'D) 1

Improving Finish Quality by Controlling Paint Application Temperature
Michael Bonner – Saint Clair Systems, Inc.

Optimizing Your Liquid Coating Operation
Stephen Houston – Col-Met Engineered Finishing Solutions

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

C70: NEW! MANAGING PERCEPTIONS FOR YOUR FINISHING BUSINESS 1

This session highlights tips for setting your internal plan/strategy for customer service. It’s important to manage your customer service personnel to ensure satisfied customers will keep coming back. A second presentation covers social media as a key marketing strategy used in small finishing businesses and major global brands alike. Attendees will learn how social media should be incorporated into marketing and how employees and company policies can help (or harm) your online reputation.

Meaningful Customer Service for the Finishing Industry – How to Bring Your Customers Back
Martin Powell – LEWCO Inc.

Managing Perceptions for Your Finishing Business
Troy Newport – The Powder Coating Institute

C71: NEW! MASTERRING A BATCH FINISHING OPERATION 6

Attendees will be presented with detailed criteria to consider when choosing between a batch or powered system. The session will include best practices recommended to provide consistent results when applying pretreatment using manual spray equipment. Cleaning, rinsing and conversion coating best practices will also be presented as well as the conventional iron phosphate processes utilized in many facilities. Additionally, attendees will learn about a unique approach to incorporate the lean manufacturing mentality with pre-engineered modular components and direct customer input to ensure a system that is labor efficient, compact, and cost effective.

Batch System Design Criteria
Aaron Hughes and Dan Guirl – General Automatic Transfer

Best Practices for Manual Pretreatment Applications
Kirk Beaster – Chemetall US, Inc. - now part of BASF Group

Innovative Conveying Systems for Batch and Semi–automated Finishing Systems – Lean Manufacturing Approach to the Finishing Industry
Alex Koza – NikoTrack

C72: NEW! ADVANCEMENTS IN AMBIENT PRETREATMENT 1

This presentation will discuss the advantages and disadvantages of iron phosphate and zirconium-based conversion coatings and how each have unique differences in chemistries and performance. Attendees will also learn nine reasons when considering zirconium-based, non-phosphorous advanced pretreatments along with best practices and practical aspects of transitioning to advanced pretreatments, including a transition success story. This session concludes with a review of the effect typical city water has on corrosion performance, with pre-buffering of a nanoceramic product to the recommended pH operating range.

What Are the Major Differences Between Iron Phosphate and Zirconium-based Conversion Coatings, and What Are the Advantages and Disadvantages?
Sergio Mancini – Bulk Chemicals, Inc.

Learn About the Newest Zirconium-based, Non-phosphorous Pretreatments!
Suresh Patel – Chemetall US, Inc. - now part of BASF Group

Improved Nanoceramic Bath Stability Through Buffering
Joe Caiozzo – Henkel Corp.

10:30 AM – 12:30 PM

C80: NEW! ACHIEVING CONSISTENT QUALITY FINISHES 1

This session contains an overview of the most common test instrumentation. Learn when and why they are used and understand how they fit into simple quality programs. The audience will learn how to best utilize LED technology in their day-to-day finishing processes, enabling them to improve their lighting quality while reducing energy costs. This presentation will also discuss why it is so important to maintain and protect equipment. Typical preventive maintenance programs, their schedule intervals and benefits of developing a program to ensure the best quality product produced and extending the life of your investment will also be provided.

Powder Coating Quality Test Equipment
Michael Beamish – DeFelsko Corp.

Harnessing the Potential of LED Technology to Optimize Your Finish and Appearance
Nicole Boss – LDPI Inc.

PM or Not to PM, “The Hidden Cost of Reactionary Maintenance”
C81: NEW! SEE IT, TOUCH IT, FIX IT. IDENTIFYING AND SOLVING FINISHING DEFECTS

This unique session will highlight examples of real world causes and solutions to common (and less common) finishing defects. Each key area of the finishing process will be covered, including pretreatment, liquid and powder coating materials and liquid and powder application equipment. Attendees will learn the best ways to identify the cause of a finishing defect as it relates to the coating process, and prevent the defect from returning. Presenters will have actual samples of a variety of defects and discuss the problem-solving process on how to correct and eliminate these finishing defects.

Troubleshooting Your Modern Cleaning and Pretreatment System Process Prior to Powder Application
David Schimpff – DuBois Chemicals

A Visual Approach to Identifying and Solving Pretreatment Defects
Ken Kaluzny – Coral Chemical Company

Understanding Coating Materials’ Impact on Finishing Defects
Bob Horton – BASF Coatings and Tom Whalen – TCI Powder Coatings

Who Do You Blame for Defects from Your Finishing Line?
Kevin Higgins and Steve Romer – SAMES KREMLIN, Inc.

C82: WE’VE GOT THE CURE

Whether convection, infrared or combination of both, the most time consuming portion of the finishing process is typically in the cure. This session will focus on the types of curing methods and how to ensure your finishing operation is using the correct oven. Learn simple steps to selecting the right oven or making modifications to an existing oven to achieve overall goals. Case studies and cost comparisons of real-life projects will be presented with a brief explanation of catalytic oven technology. The innovation advantages of UV-cured powder coatings cured with UV LED will also be demonstrated.

Selecting the Right Oven – The Correct Oven Pays for Itself
Martin Powell – LEWCO Inc.

Oven Retrofit/Rebuild vs. New
Steven Onsager – Westran Thermal Processing

Infrared Oven Applications for Finishing with Liquid and Powder Coatings, Including Case Studies
Michael Chapman – Heraeus Noblelight America LLC

Developments in UV LED Curing Technology and UV-cured Powder Coatings
Michael Knoblauch – Keyland Polymer UV Powder Coating, LLC

1:30 PM – 3:30 PM

C90: EFFICIENT CURING WITH INFRARED

This session will review the basics of IR including what it is, how it is produced and its characteristics. It will include all equipment sources of infrared followed by a discussion of the wide variety of IR applications, which showcase the many ways in which IR can be utilized in today’s industrial environment. Attendees will also learn several ways to troubleshoot with infrared technology.


C91: PROTECTING YOUR MOST VALUABLE ASSET: YOUR EMPLOYEES

This session provides pertinent safety information for the finishing system user including relevant safety codes for finishers. There will be a presentation on safety measures to avoid fires, mishaps, and proper safety devices/equipment for personnel. Attendees will learn the requirements for personal protection equipment (PPE), what they are, if they are required, and what degree of protection is necessary. The session will provide best practices for PPE necessary to operate blast media, wash/pretreatment, powder coating, liquid paint, and hanger/part stripping systems. Attendees will receive an overview of the technologies and code requirements.

Safety in the Finishing Environment – Paint, Powder, Dust, and Other Considerations
Martin Powell – LEWCO Inc.

Personal Protection Equipment – What a Finisher Needs to Know
Nicholas Liberto – Powder Coating Consultants

C92: NEW! THE EVOLVING TECHNOLOGY OF POWDER COATING

This session will demonstrate how evolving technology in the coating industry is helping to eliminate some age-old powder coating issues such as powder accumulating on hangers and fixtures, reaching difficult to coat areas, measuring uncured powder film and fast color change on an automated powder system. Attendees will also learn about extraneous elements that can increase the cost of powder coating operations and ways to combat them.

Solving Age Old Problems in Powder Coating with Today’s Technology
Joe Glassco – Wagner Industrial Solutions

Hunting Down and Eliminating Hidden Costs in Your Powder Coating Operations
John Cole – Parker Ionics

Knowing When to Upgrade Your System
Matt Ambrose – Nordson Corp.
### FINISHING

**THURSDAY, NOVEMBER 9**

**8:00 AM – 10:00 AM**

C100: **NEW! THE ULTIMATE POWDER COATING**

This session will show all the details required to create the optimal powder coating process from start to finish. It will also go into the six root causes to avoid that can and typically will lead to a powder coating failure. No matter your experience level, these two sections combined will assure the attendee leaves with all the elements.

Stephen Houston – Col-Met Engineered Finishing Solutions, Chris Merritt – Gema USA Inc., Ron Cudzilo – George Koch Sons and Suresh Patel – Chemetall US, Inc. - now part of BASF Group

C101: **ELECTROCOATING EQUIPMENT CONSIDERATIONS**

In this session, the presenter will discuss the equipment that is necessary in the electrocoating process including tanks, circulation system, anolyte/catholyte system, filtration, rectifier, post rinses, curing oven and cooling tunnels. This will include evaluating production rates, cost considerations, footprint availability, and defining the paint process. Information will be presented on the various material handling options available.

Chad Andreae – Therma-Tron-X, Inc.

**1:30 PM – 3:30 PM**

C111: **NEW! THE EVOLUTION OF ARCHITECTURAL COATINGS**

The attendee will learn about the beginnings, current technology and future of coatings developed specifically for the architectural market. These coatings can be in liquid, coil coatings or powder coatings. These coatings can be applied to many substrates and used on building components, railings, light poles and fence. They have been designed to meet the strict performance requirements of AAMA (American Architectural Manufacturers Association). Colors can be solids or metallic effect coatings.

Michael Withers and Manuel Mayer – Axalta Coating Systems and Barry Frost – DuraCoat Products Inc.

### FORMING & FABRICATING

**MONDAY, NOVEMBER 6**

**8:00 AM – 10:00 AM**

F18: **COIL PROCESSING: LEVELING, SLITTING AND BEST PRACTICES**

Examine the technologies of leveling and deburring, discuss several slit coil rack designs and implementation case studies, learn how to slit new high strength steel materials, and take a deep-dive into the aspects of customization of universal joints and drive shafts.

*Slitting the New High Strength Steels*

Al Zelt – ASKO Inc.

*Best, Safe Practices and Operating Efficiency for Slit Coils*

Michael Baach – Philpott Rubber & Plastics Company and Stephen Detweiler – Philpott Rubber Co.

*Leveling and Deburring: Modern Metal Processing*

Nicholas Miller – ARKU Coil Systems

*What Is Beyond Universal? A Journey into Customizing Universal Joints for Metal Processing Machinery*

Maxine Gomez – Belden Universal

**10:30 AM – 12:30 PM**

C110: **NEW! GOT CORROSION?**

This session will provide an in-depth overview of the different types of corrosion associated with the metal industry, the leading causes, as well as ways to minimize them. Learn about a novel technology recently patented for the process of pretreating metal substrates prior to paint and learn about the application, monitoring, control and performance of this new technology. Finally, a discussion to help electrical equipment manufacturers make the most of their coatings investment by explaining the causes of corrosion and the variables they should consider when selecting a coatings system for their products.

A Step by Step Guide to Prevent Corrosion: A Global Enemy

Scott Fouts – KYZEN Corp.

Innovation Update of Novel Polymer Pretreatment Technologies

David Schimpff – DuBois Chemicals

Corrosion Considerations and Lifecycle Cost for Electrical Components

Maria Lamorey – PPG Industries

**1:30 PM – 3:30 PM**

F19: **PRESS BRAKES FOR ENGINEERS**

Learn how an air-bend radius turns sharp at 63% of the material thickness, the effects operationally, and the development of a correct flat pattern.

Steve Benson – ASMA LLC
### TUESDAY, NOVEMBER 7

#### 8:00 AM – 10:00 AM

**F48: TUBE PRODUCING AND JOINING**

Explore the requirements needed, such as infrastructure and software changes, to move tube and pipe production into the realm of IoT and Industry 4.0 to keep up with industry trends. Review the state of the art in various applications of thermal imaging for High Frequency welded tube and pipe.

- **Advancements in HF Welding Data Collection and Analytics**
  - Victor Monreale – Thermatool Corp.
- **Advancements in Thermal Imaging for High Frequency Welding Applications**
  - Grant Huffman – Thermatool Corp.

#### 10:30 AM – 12:30 PM

**F58: ADVANCED ROLL FORMING TOOLING AND LINE TROUBLESHOOTING**

Discover how to optimize functionality for effective set–ups and roll forming as well as the differences between tube mill systems and weld roll forming systems during this session.

- **Roll and Die Tooling Designs**
  - John Kopsick – Formtek, Inc.
- **Advanced Roll Forming Techniques**
  - Paul Williams – Hill Engineering/ Formtek Inc. and Brian Kopsick – Formtek, Inc.
**FORMING & FABRICATING**

**TUESDAY, NOVEMBER 7**

10:30 AM – 12:30 PM

**F59: ADVANCED PRESS BRAKE TECHNOLOGY (CONT'D) [I]**

Automation in Bending: What is the Right Technology for Me?
Marcel Fiedler and Paul LeTang – Bystronic Inc.

Automation in Bending: Reducing the Cost Per Part
Vincent Iozzo – TRUMPF Inc.

1:30 PM – 3:30 PM

**F68: PRESS BRAKE TOOLING [I]**

Learn the differences in press brake tool heights and clamping systems and which will work best for your shop. Discuss the three categories of press brake tooling, explore different hardening methods, and look at proper care and maintenance for your equipment.

An Overview of Press Brake Tooling Heights and Clamping Systems
Larry Boden – Mate Precision Tooling

The Drawbacks, Benefits, and Differences Between Precision Ground, Planer and Precision Planer Styles of Press Brake Tooling
Steve Benson – ASMA LLC

**F69: STEEL 101: MILL TO FABRICATOR [B]**

Learn all facets of the steel making process, including chemistry, manufacturing process for flat rolled, bar, plate and specials, steps to process steel before it reaches its end-user, and what the fabricator can expect when forming the various grades specified by OEMs. Market drivers will also be covered.

John Eckstein and John Packard – Steel Market Update

**WEDNESDAY, NOVEMBER 8**

8:00 AM – 10:00 AM

**F78: NEW! TUBE & PIPE BENDING 101 [I]**

Learn about technological and equipment considerations for tube forming for mechanical and structural tube bending as well as how to increase productivity in mandrel tube bending processes by having a good understanding of modern lubricant regimes.

Dynamic Lubrication for Mandrel Tube Bending
Christopher Fletcher – Tower Metalworking Fluids

Tube Forming – Best Practices
Lisa Wertzaugher, Gus Griffin and Jeff Otten – Superior Tube Products

**F79: PRESS BRAKE SAFETY: ANSI B11.3 EXPLAINED [I]**

OSHA/ANSI regulations and standards will be explained, and real world examples outlining an application appropriate approach to defining under what circumstances various types of safety methods or devices maximize throughput will be presented.
Douglas Raff – Paragon Industrial Controls, Inc.

10:30 AM – 12:30 PM

**F88: ROLL FORM TOOLING INSTALLATION, TROUBLESHOOTING AND LUBRICANTS [I]**

Review the latest technologies in lubricants and coolants available for metal roll forming processes and learn about a seven step selection process for finding the best lubricant. Plus, learn how to properly setup roll form tooling and document your setup, and explore roll forming trouble shooting techniques.

Roll Form Tooling Installation and Trouble Shooting
Steve Ebel – Roll Form Solutions Inc.

Modern Lubricants for Roll Forming Processes
David Kinnard – Tower Metalworking Fluids

**F89: NEW! BEST PRACTICES: MACHINE TOOL FIELD & INSTALLATION SERVICE TECHNICIAN PANEL [B]**

Join this panel as they discuss the best practices for recruiting, training, and retaining service technicians through real world examples.
David Kloos – Mitsubishi Laser, James Rogowski – TRUMPF Inc. and James Warren – FMA

1:30 PM – 3:30 PM

**F98: TUBE LASER PROCESSING 101 [B]**

Review a case study on a traditional sheet metal fabricator that took a risk to grow in the tube laser processing area, look at fiber laser tube processing for cutting applications, and learn how laser processing can affect how parts fit into assemblies and future design possibilities.

Tube Laser Processing Case Studies
Gregg Simpson – Ohio Laser LLC

Fiber Laser Tube Processing for Cutting Applications
Mauro Corno – BLM Group USA

Tru Laser Tube: Advancements in Laser Tube Processing
Ryan Welcome – TRUMPF Inc.

Case Study – Richards Sheet Metal Works
Tube Laser Processing Program
Dee Roskelley – Richards Sheet Metal Works, Inc.
F99: EFFECTIVE SAFEGUARDING RISK ASSESSMENT

Understand the collaborative risk assessment process for safeguarding, task and hazard identification, and the real world scoring matrix during this session which also features a case study of an un-guarded machine.

Douglas Raff – Paragon Industrial Controls, Inc. and Brian Roberts – CNA Risk Control Services

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F108: NEW! TUBE & PIPE FORMING

Explore various aspects of the tube bending industry including the difference between bending tool sets and bending tool systems and how to apply both in a real world scenario, new technologies in rolling processes and tube bending with a special focus on productivity and quality, and the automation of tube bending.

Bender Tooling Systems (Special Rotary Draw Tooling Solutions)
Robert Want – Tools for Bending

Modern Tube Bending Machinery
Greg Miller – Tubular Solutions Inc.

How to Increase Productivity and Quality in Automated Tube Forming Production
Klaus Wurster – WAFIOS Tube Automation

F109: ROLL FORMING IN-LINE PUNCHING, CUTOFF DIES AND PRESS TONNAGE

Explore in-line punching concepts to determine the best cutoff application and punching and cutoff press selection. Discuss the different types of presses used in roll forming and how the tonnage ratings of these presses may not be the tonnage you need.

Adding Value to Your Raliforming Lines with In-line Punching and Cutoff Dies
Paul Williams – Hill Engineering/Formtek Inc.

When the Press Tonnage Rating Is Really Not the That Tonnage in a Roll Forming Line
Paul Williams – Hill Engineering/Formtek Inc.

JOB SHOP

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F26: NEW! THE IMPORTANCE OF SCHEDULING, TRACEABILITY AND CLASSIFYING INVENTORY FOR MANUFACTURERS

This comprehensive session will provide tools and solutions to track and trace the raw materials, machinery and even the personnel involved in manufacturing your products and reducing your inventory while maintaining customer service and scheduling using MES.

The Importance of Traceability in a Manufacturing Environment
Ruben Mirensky – IMCO Associates, Inc.

The Importance of Properly Stratifying Inventory
Ruben Mirensky – IMCO Associates, Inc.

The Importance of Good Production Scheduling
Ruben Mirensky – IMCO Associates, Inc.

1:30 PM – 3:30 PM

F36: ACTIVITY–BASED COSTING AND ESTIMATING FOR PROFITABILITY IN THE JOB SHOP

This presentation goes over the intricacies of job costing and estimating in a job shop. Costing for job shops and high mix, low volume shops is critical. Costing jobs correctly could mean increased profits and getting it wrong could mean long running unprofitable work. Attend this session to gain insight on the importance of activity based costing, estimating and allocating the appropriate cost to the right job.

Job Shop Costing and Estimating
Don Clutter – MIE Solutions

Activity Based Costing — It’s as Easy as ABC
David Lechleitner – KeyedIn Solutions

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F46: NEW! CRACKING THE PAPERLESS CODE FOR MANUFACTURERS

With more companies working toward going paperless, others struggle to understand what it fully entails. This session breaks down the concepts and will walk you through the process, providing real world case studies, and wrapping up with a brief Q&A. Discover why some companies succeed, others efforts die out, and how to make going paperless work for your company.

**JOB SHOP**

**TUESDAY, NOVEMBER 7**

10:30 AM – 12:30 PM

**F56: NEW! LEAN MANUFACTURING JOURNEY THROUGH THE JOB SHOP**

A look at lean manufacturing and the press brake followed by a case study on a job shops journey from implementation with different perspectives of the changes, challenges and successes of implementing lean. The session will take a deeper dive into the lean body of knowledge throughout the presentation.

**Lean Manufacturing and the Press Brake**
Steve Benson – ASMA LLC

**Looking at Lean Journey Through the Eyes of the Job Shop!**
Jeff Sipes – Back2Basics, LLC, Richard Steel, Jr., Matt Feight and Mike Repine – Miller Welding & Machine

1:30 PM – 3:30 PM

**F66: NEW! LEVERAGE REAL-TIME COSTS AND DOUBLE OUTPUT**

Gain practical knowledge for leveraging real-time access to up-to-the-minute material costs, labor rates, machine run-time, post-cutting operations, and other costs while managing high-variety production and increasing your output.

**Fabrication Quoting: Passing on Tribal Knowledge**
Brad Stropes – SecturaSOFT

**Merits and Limitations of Various Practical Approaches to Job Shop Production Management and an Optimal Mix of Those Approaches**
Prasad Velaga – Optisol

**Doubling Plant Output and Delivering On Time, Every Time – How to Make It Happen**
Steve Bieszczat – IQMS and Jeff Hohlfeldt – Northern Industrial Manufacturing

**WEDNESDAY, NOVEMBER 8**

8:00 AM – 10:00 AM

**F76: NEW! CONFIGURABLE ERP FOR YOUR JOB SHOP FUTURE**

More and more shop owners are considering the cloud as a viable option for their key business solutions. One of the challenges of these solutions has traditionally been in multi-tenant environments and the ability to customize the solution to meet their specific needs. Exciting new opportunities are now available including configurable SaaS allowing users to develop entire modules to fit their business. Attend this session to learn about the latest trends and why implementations of ERP fail.

**Why ERP Implementations Fail**
Bridget Lazlo – Guardian Business Solutions

**Is Configurable SaaS ERP in Your Future?**
David Lechleitner – KeyedIn Solutions

10:30 AM – 12:30 PM

**F86: NEW! GUIDE TO GETTING THE BEST OUT OF YOUR DATA**

Learn how OEE (Overall Equipment Effectiveness) gives you the best metric to evaluate your factory capacity & efficiency. OEE has traditionally been a manual process with white boards, paper downtime sheets, etc. These methods are sufficient for analyzing information “after-the-fact”, data needs to be available in real-time for it to be truly valuable. The only way to collect data real-time is to do it automatically. You can view equipment data, associate it with workflows, other enterprise systems, KPIs and make informed decisions from anywhere, anytime. Attendees who want to improve operational health will find value in this session.

**MAKE IT BETTER, KEEP IT BETTER: The Short & Long Term Benefits of Automatically Collecting OEE Data**
Keith Magnant – ShopFloorConnect

**Getting the Best out of Your Data for Route-based Maintenance and Condition-based Monitoring**
Frederic Baudart – Fluke Corp.

1:30 PM – 3:30 PM

**F96: EFFECTIVE PRODUCT DIFFERENTIATION IN COMMODITIZATION BASED MARKETPLACE**

Attend this session to understand how job shops and manufacturing companies can increase sales and minimize commoditization in the age of information technology in the marketplace. The engaging and interactive session will include actionable takeaways on crafting new differentiators without added overhead, methods for effectively communicating to the marketplace, and increasing your organization’s overall competitiveness.

**How Job Shops and Manufacturing Companies Can Increase Sales and Minimize Commoditization in the Age of the Information Economy**
Rick Farrell – Tangent Knowledge Systems

**Effective Product Differentiation in a Commoditization-based Marketplace**
Andrea Olson – Prag’madik
THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM
F106: SALES 101 FOR THE FABRICATION INDUSTRY  
You will acquire proven tactics, strategies and approaches to high-impact, effective sales. Learn to keep the customers you have and attract the ones you want! Lead generation, neuroscience (experimental psychology) and the case studies from Uber and Airbnb will be shared.

Sharing Economy Sales Force: How Lessons from Uber and Airbnb Apply to Selling Your Product
Charles Cohen – Manufacturers’ Agents National Association

Outsmart and Outsell Your Competition Using Neuroscience
Bryan Gray – RPG – Revenue Path Group

The Single Best Lead Generation Tactic
Bruce McDuffee – Manufacturing Marketing Group

10:30 AM – 12:30 PM
F116: SUSTAINABLE DESIGN AND SOLUTIONS FOR THE JOB SHOP  
What does “Sustainability” mean for your company’s products or services and what actionable steps can you take to make your products less impactful on the environment? This example filled session will provide insight into the ways that the design for sustainability and a water recycling strategy can help.

Creating Value Through Design for Sustainability
Robin Tindall – Hypertherm Inc. and Shelly Severinghaus – Long Trail Sustainability

How to Determine If Water Recycle & Reuse Makes Sense for Your Organization
Tom Sage – DMP Corp.

1:30 PM – 3:30 PM
F32: NEW! LASER ADDITIVE TESTING AND APPLICATION SOLUTIONS  
This session will offer applications in laser additive manufacturing with some great case study examples. Wire-feed AM is a promising technology for producing larger components with moderate complexity. Full scale testing and characterization and the fatigue life using lasers will also be discussed.

Wire Based Robotic Laser Additive, Welding and Cladding Applications and Examples
Erik Miller – Miller Electric

Full-scale Testing and Characterization of the Fatigue Life of Laser Additive Manufacturing Repaired Alloy Steel Components
Kurtis Bell – IRISNDT

TUESDAY, NOVEMBER 7

8:00 AM – 12:30 PM
AWF100: LASER WELDING FOR TODAY’S FABRICATOR WORKSHOP  
This workshop is full of experts covering the latest advancements on laser welding. Topics include: design consideration, industrial laser welding, laser sources for fiber, disk and diode, system overview, hybrid laser welding and additive technologies. Attendees will have additional time to discuss any application with the experts.

Essential Considerations for Laser Welding: From Component Design to Implementation
David Havrilla – TRUMPF Inc.

Introduction to Industrial Laser Welding
Tom Kugler – Laser Mechanisms, Inc.

Laser Sources for Industrial Laser Welding: Fiber, Disk and Diode
Jean-Philippe Lavoie – Coherent

System Overview for Laser Welding
Mark Rodighiero – Amada Miyachi America

Material Selection for Laser Welding
Geoff Shannon – Amada Miyachi America

Hybrid Laser Welding
Paul Denney – Lincoln Electric

Laser Welding and Additive Technologies
Wayne Penn – Alabama Laser

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM
F22: NEW! FIBER LASER CUTTING AND JOINING: RECENT ADVANCES IN TECHNOLOGY, TOOLS AND APPLICATIONS  
Advances in lasers’ power, improved cutting speeds and edge quality, and lower operating costs have opened more avenues for use of the technology. This comprehensive session will discuss recent advancements in fiber laser cutting and joining tools, applications and the latest technology for fabricators.
**LASERS**

**TUESDAY, NOVEMBER 7**

1:30 PM – 3:30 PM

**F62: NEW! INNOVATIVE LASER APPLICATION AND SOLUTIONS**

The right laser system can bring benefits to your shop floor. Our laser experts will cover processing of fully automated sheet metal, processing large image fields on the fly and latest innovations in marking.

**Fully Automated Sheet Metal Processing for the Future**
Mark Bronski – TRUMPF Inc.

**Processing on the Fly in Large Image Fields**
Dale Sabo – SCANLAB America

**Latest Innovations in Laser Marking**
Frederic Lallemand – Gravotech, Inc.

**WEDNESDAY, NOVEMBER 8**

8:00 AM – 10:00 AM

**F72: NEW! FIBER LASER TECHNOLOGY & ADVANCEMENTS**

Technological advancements are vital to the fiber laser industry. The newest lasers provide substantial cost, energy, and space-saving opportunities to users, and will continue to become stronger and more powerful in time. This session will discuss robotic laser with direct pulse control, CO₂ and fiber laser application in a high production world and new developments in applications and productivity.

**Fiber Developments and Productivity**
Dustin Diehl – Amada America, Inc.

**CO₂ and Fiber Laser System Market Adoption and Applications: Finding New Ways to Employ These Versatile Systems**
Robert Boyes – Coherent Inc.

**Fiber Lasers in the High Production World**
Hank White – MC Machinery Systems, Inc.

10:30 AM – 12:30 PM

**F82: NEW! LASER JOINING ADVANCEMENTS**

Today’s laser joining offers a variety of new advancements that expand the possibilities for laser joining. Some of these advancements in flexibility with part design, laser edge and optical seam tracking and filler wire for applications will allow attendees an overview of these select processes.

**Using Laser Welding’s Flexibility with Part Design to Optimize Manufacturing**
Brett Thompson – TRUMPF Inc.

**1:30 PM – 3:30 PM**

**F92: NEW! LASER BEAMS AND MATERIAL ADVANCEMENTS**

Our experts will discuss laser beams and material advancements in fabrication. Hardening and annealing processes through remote laser optics process, direct diode and control of the laser bonding process will be highlighted.

**Hardening and Annealing Processes Through Remote Laser Optics**
Tom Graham – Abicor Binzel

**High-Power High Brightness Direct Diode Laser Applications Using Integrated Dynamic Beam Shaper**

**High-Power Diode Lasers and Innovative Industrial Applications**
Oleg Raykis – Laserline Inc.

**Optimization and Control of the Laser Bonding Process for Industry**
Joseph Sarver – Ferro Corp.

**LEAN**

**MONDAY, NOVEMBER 6**

8:00 AM – 10:00 AM

**F14: NEW! LEAN PRINCIPLE: STRATEGIC PLANNING AND ORGANIZATIONAL ALIGNMENT**

Learn to recognize the different mistakes companies make and also what systems to put in place to ensure your success. “Lean” has unfortunately received status as a buzzword, where everyone thinks they know what lean is yet few have truly been through a full transformation. Depending on research, 70%-90% of transformations fail. Engagement is a critical element to help drive your success rate up, yet most companies do a poor job here, too.

Pete Winiarski – Win Enterprises, LLC
10:30 AM – 12:30 PM

F24: NEW! LEAN PRINCIPLE: DEVELOPING PEOPLE AND PROCESSES

Being a conscious leader will help keep you centered and grounded, gain clarity, and raise your awareness of how to lead your team to achieving great results. This presentation will provide the true essence of performance management and how it can benefit your organization. Individuals will take away examples of how companies are successfully using Operational Excellence.

Creating a Journey to World Class Performance
Utilizing Operational Excellence
Korey Zawadzki – Competitive Solutions, Inc.

The Best Leadership Approach to Reduce Your Stress, Engage Your Team, and Achieve Rock Star Results
David Tweedt – Win Enterprises, LLC

10:30 AM – 12:30 PM

F54: LEAN TOOLS: FLOW AND PULL

Creating flow in fabrication shops with highly complex products, demand and shared resources can be challenging. The speaker will explain, step by step, how to apply advanced lean principles to create a value stream of multiple product flows at the pull of the customer. See these concepts in action with case studies of complex manufacturing operations that have gone beyond basic value stream mapping to create a future state for mixed model production.

Kevin Duggan – Institute for Operational Excellence

1:30 PM – 3:30 PM

F34: LEAN TOOLS: A3 THINKING – DEVELOPING PEOPLE & SOLVING PROBLEMS

We understand the Lean Tools (cells, Kanban, VSM, standard work), but how good are we at solving problems? In fact, does it ever seem like we are fixing the same problem over and over? Effective improvement requires changing how people approach, address, and resolve problems. We need to develop “thinking problem-solvers.” Very visual and hands-on, A3-Thinking is a proven step-by-step methodology that actively engages the problem solver, their supervisor, and those affected by the problem.

Mike Osterling – Osterling Consulting, Inc.

1:30 PM – 3:30 PM

F64: LEAN TOOLS: QUICK CHANGEOVER AND TOTAL PRODUCTION MAINTENANCE (TPM)

Total Productive Maintenance (TPM) rests on eight principles/pillars. This overview will help you assess and plan your journey toward a more productive outcome, why TPM principles form the required foundation for a sustainable system and implement complete maintenance plans. This presentation will also discuss the advantages and challenges of improving changeover performance, including what factors are critical for success, the steps to successfully implement a program, how to maximize results, and how to sustain progress.

Bill Artzberger – Lean Learning Center

8:00 AM – 10:00 AM

F44: LEAN VALUE STREAM MAPPING, ADDRESSING DIFFERENCES BETWEEN OFFICE AND SHOP FLOOR

VSM’s roots are in production, but most Value Streams include non-production functions like engineering, purchasing, service and sales — or the VS doesn’t even touch the product (think HR, finance and marketing). Successful mapping there requires a different approach. Properly performed, VSM surfaces and addresses issues in highly cross-functional processes related to: organizational alignment, leadership engagement, directing teams and consensus building. Leave this presentation armed with new insights on how to VSM most any process!

Mike Osterling – Osterling Consulting, Inc.

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F74: NEW! LEAN PRINCIPLE: STANDARDIZE WORK – THE BASIS FOR LEAN

Standardized work is one of the most powerful but least used lean tools. By documenting the current best practice, standardized work forms the baseline for kaizen or continuous improvement. You will be showed the different types of Standardize Work, and which format to use. Real-world examples will help guide you.

Anthony Manos – Prolero, Inc.
LEAN

WEDNESDAY, NOVEMBER 8

10:30 AM – 12:30 PM
F84: LEAN TOOLS: 5S WORKPLACE ORGANIZATION AND STANDARDIZATION
Learn the fundamentals of 5S and how it will improve your organization. The 5S system is a deceptively powerful technique that will save you time and money and make your workplace more productive and safe. Learn through a class exercise the 5S’s and what the impact will be.
Anthony Manos – Profero, Inc.

1:30 PM – 3:30 PM
F94: NEW! LEAN PRINCIPLE: HOSHIN KANRI – HOW TO ACHIEVE THE FUTURE YOU SEE
Hoshin (a.k.a. Policy Deployment) is a powerful methodology to achieve your long-term strategic goals. This session will walk you through step-by-step this powerful strategic planning system that has helped many companies remained focused on what’s important in the long-term while executing tactical day-to-day critical operations.
Anthony Manos – Profero, Inc.

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM
F104: LEAN TOOLS: PREVENTATIVE MAINTENANCE AND SUSTAINABLE TECHNIQUES & LIFE CYCLE ASSESSMENTS
This blended session covers key differences and cost savings in PM and PdM, using LCA (Life Cycle Assessments, to identify hot spots, reduce impacts throughout their supply chain, and an overview of how lean manufacturing can focus on sustainable initiatives, while helping manufacturers remove production wastes. Case studies provided.
Saving Money by Adopting Preventative (PM) and Predictive Maintenance (PdM) Strategies
Michael Schlagenhauffer – Acuity
Driving Sustainability Through Life Cycle Assessments
Shelly Severinghaus – Long Trail Sustainability and Robin Tindall – Hypertherm Inc.
Achieving Sustainable Practices in Manufacturing Through Lean Techniques
William Shema – Paper-Less, LLC

MANAGEMENT

MONDAY, NOVEMBER 6

8:00 AM – 10:00 AM
F15: NEW! TODAYS DIGITAL AND INBOUND MARKETING STRATEGIES FOR FABRICATORS
In order to successfully grow your business, you need to attract and work to retain a large base of satisfied customers. The experts will discuss in-bound marketing, using the website to generate leads and customer acquisitions. Attendees will take away strategies and actionable items to improve overall marketing results.
Attract, Convert, Close, and Delight Your Prospects with Inbound Marketing
Nicole Wagner – Stevens & Tate Marketing
Today’s Industrial Digital World – Strategies to Excel
Tim Doyle – TopSpot
Blogging Is Great. But...
Dan Konstantinovsky – RH Blake

10:30 AM – 12:30 PM
F25: NEW! CURRENT ECONOMY, LABOR AND EMPLOYMENT UPDATE FOR MANUFACTURING
What does the coming year hold in store? The U.S. has regained a good bit of its manufacturing influence but the challenges have not vanished and will be with us next year as well. This session will conclude with an overview of how attendees will learn about Trump’s immigration, labor, and employment policies and how it will affect workers. Participants will learn about the increasing patchwork of federal, state, and local labor and employment laws. Finally, attendees will discover how the minimum wage, paid sick leave, and Trump’s infrastructure plan will affect wages, labor, and other policies.
Looking Ahead – Economy of 2018
Chris Kuehl – Armada Corporate Intelligence
2017: Labor and Employment Update
John Cruickshank – Alaniz Schraeder Linker Farris Mayes
1:30 PM – 3:30 PM
F35: NEW! ACHIEVING SUPPLIER SUCCESS IN TODAY’S GLOBAL MANUFACTURING ENVIRONMENT

Today’s global manufacturing environment is changing faster than ever before. This session will discuss what OEMs are seeking from today’s suppliers, 3D Value Chains and what this strategy means to manufacturing success. This presentation will also describe 5 steps to achieve everything, with no problems standard, which attendees can take away and use immediately in their businesses.

Achieving Supplier Success in Today’s Global Manufacturing Environment
Joseph Mazzeo – Integrated Lean and Quality Solutions, LLC

Building 3D Value Chains
Alan Lund – CORE Business Management Solutions

5 Steps to Achieve What Customers Want: Everything, with No Problems
Paul Vragel – 4aBetterBusiness, Inc.

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM
F45: NEW! GLOBAL LANDSCAPES AND CULTURAL AWARENESS FOR COMPETITIVE ADVANTAGE

This session will discuss what cultural awareness is, the application and use of diversity and inclusion in the workplace and why it is important, and how having cross-cultural capabilities can have a significant and positive effect on the success of a company doing business in a global environment.

The Benefits of Diversity for Business Success
Laura Allen – Kettering University

Using Cultural Awareness as a Competitive Advantage for Global Business Success
Joseph Mazzeo – Integrated Lean and Quality Solutions, LLC

10:30 AM – 12:30 PM
F55: NEW! ACCELERATE PROFITABILITY THROUGH COST REDUCTION STRATEGIES

To achieve and sustain profitability, you must have a business framework that is capable of supporting the fundamentals of profitability and processes. In addition, advances in technology, globalization of markets, and talent wars have all contributed to a new business landscape. This session will provide a framework, examine the business assumptions and provide tools to learn innovative strategies you can begin implementing to accelerate cost reduction.

Accelerating Profitability Through Cost Reduction Strategies
Alan Lund – CORE Business Management Solutions

10 Business Assumptions That Will Kill Your Company
Andrea Olson – Prag’madik

Multiple Pathways of Growth: Innovative Strategies for Business Leaders
John Dearing – Capstone

1:30 PM – 3:30 PM
F65: NEW! INNOVATIVE STRATEGIES FOR LEADING, PROTECTING AND GROWING YOUR ORGANIZATION

Hear our experts discuss proven step by step methods and framework for leading, protecting and growing your organization. Strategy is as useful at helping leaders determine what not to do, as it is at helping them determine what to do. Learn how to build a winning strategic architecture and clarify the complexities that combined become your competitive advantage.

Leading an Organization to Profitability
Mark Hamade – Vivaris Capital

Learn Your Strategic Architecture of Growth
Mark Frasco – COACT Associates, Ltd.

Protecting Manufacturing’s Crown Jewels
Vincent Howell – Corning Inc.

FAST 4 Principles Every Business Needs to Achieve Success and Drive Results
Gordon Tredgold – Leadership Principles LLC

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM
F75: NEW! INNOVATION, THE ART OF BEING WRONG

Organizations must embrace failure to accelerate innovation. Through mental framing, learn to create freedom from the fear of failure using adaptive analytical perspectives that encourage ideas and discovery. Keep your organization innovative and successful by creating a culture of passion, drive and ambition in the midst of failure.

Stefana Saxton – Black & Veatch
WEDNESDAY, NOVEMBER 8

10:30 AM – 12:30 PM

F85: NEW! SUCCESION AND EXIT PLANNING FOR THE NEXT GENERATION OF METAL FABRICATORS

All job shops, no matter their size, whether a family business, partnership, or single owner need succession planning. This session will provide applicable tools to improve business, chart a roadmap for successful succession, provide a multidisciplinary approach to business succession, and an exit strategy to prepare your company for sale.

Business Succession Planning for Metal Fabricators – Common Techniques, Issues to Avoid & Valuation Fundamentals
Jonathan Michael – Burke, Warren, MacKay & Serritella

Succession Planning for the Next Generation of Fabricators
Henry Hutcheson – Family Business USA

Fabricating a Stronger Future Through Exit Strategy Preparation
Zachary Corson – Douglas Group

1:30 PM – 3:30 PM

F95: NEW! HOW TO DEVELOP AND MANAGE A RESHORING PROJECT

Reshoring may be a popular topic with executive management, but it’s not as easy as it seems. Not only must you consider a new American manufacturing site and new processes, but you must also redevelop your supply base, and find and train skilled workers. You may benefit from local government incentives and reshoring publicity, but these things also take time and effort. In addition, there are likely to be complications when leaving a foreign location such as applying for exit permits, employee contract buy-outs, and trying to get tools and equipment back.

Learn how to manage all these moving parts when undertaking a Reshoring project. This session is led by the expert in Reshoring project management and author of The Reshoring Guidebook.
Rosemary Costes – Reshoring Institute at University of San Diego

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F105: NEW! INCREASING ORGANIZATION READINESS AND AGILITY IN YOUR COMPANY

Most businesses over 5 years have yielded significant waste in their services, internal communication & operating costs resulting in lower profitability. Agile is a process most often associated with technology firms, but can now be applied to all businesses to help them reach the next level of performance. Our simple Freedom Teams and Freedom Systems 3-step formula can help any small business on the cusp of growth.

Soraya (Morgan) Gutman – Brand Launcher

10:30 AM – 12:30 PM

F115: MARKETING 101 FOR FABRICATORS

In order to successfully grow your business, you’ll need to attract and then work to retain a large base of satisfied customers. The experts will discuss in-bound marketing, using the website to generate leads and customer acquisitions. Attendees will take away strategies and actionable items to improve overall marketing results.

Four Actionable Strategies to Improve Marketing Results
Dan Gartlan – Stevens & Tate Marketing

How Manufacturers Can Use Their Website to Generate Scalable and Predictable Lead Generation and Customer Acquisition
Josh Curcio – protocol 80, Inc.

How to Make Your Website Work as Hard as You Do
Chris Rooney – Digital Bridge Solutions

1:30 PM – 3:30 PM

F125: GROW YOUR BUSINESS: FOR KEEPS OR FOR SALE!

Far too many owners and executives at privately held specialty manufacturing operations spend more time putting out daily fires than focusing on the big picture of the business. What is your plan for your business and how do you plan to get there? Learn the key metrics for that matter for growth and maximum sale price.

**STAMPING**

**MONDAY, NOVEMBER 6**

**8:00 AM – 10:00 AM**

**$10 NEW! DEEP DRAW PROCESS TECHNOLOGY**

Learn how a custom servo-hydraulic press with multiple axes, coupled with a coil feed line, robotics and down-stream processing equipment increased Pentair’s part quality, decreased per-part costs, maximized raw material scrap value and significantly increased overall process uptime. Attendees will see demonstration of critical concepts through review of a real-world examples.

Jon Schmidt - Neff Press Inc. and Scott Heitman - Pentair Inc.

**10:30 AM – 12:30 PM**

**$20: NEW! DEEP DRAWING PRINCIPLES**

One of the most complex metalforming operations is the deep-drawing process. In deep drawing, the objective is to force the sheetmetal to "flow" into a die cavity to produce the required shape with minimal stretching and thinning of the material. This presentation examines the fundamental principles for designing successful deep-drawing operations.

Peter Ulintz – Precision Metalforming Association

**$21: DIE SENSING FUNDAMENTALS**

Poor part quality and missed production quotas can be a daily source of frustration. Through real-world examples, this presentation illustrates how press shops are successfully implementing error-proofing sensors, preventing die crashes and implementing quick die changes regardless of their experience with automation.

Will Healy, III. and Dave Bird – Balluff Inc.

**1:30 PM – 3:30 PM**

**$30: LUBRICATION SELECTION & APPLICATION**

This multi-speaker session examines how the use of data can drive stamping lubricant decisions and describes an accurate ranking method that correlates well with actual heavy stamping results. Also presented is how precision spray control (SPC) can be an effective way to ensure uniform application of oils and waxes for lubrication to help increase production, reduce scrap and decrease operating costs.

Separating Fact from Friction – Use Data to Drive Stamping Lubricant Decisions
W. Jeff Jeffery – IRMCO

Improve Lubrication Application with Precision Spray Control
Dominic DeMaria – Spraying Systems Co.

**$31: IN–DIE ASSEMBLY, MONITORING & ADJUSTMENTS**

In-die fastener installations and the application of part measurement, die-adjustment and part-tracking technologies will be presented in this multi-speaker track. The first presenter explains the benefits of in-die fastener installations for increased productivity and the elimination of bottlenecks. Animations of the die tooling and case studies of typical and unique projects also are presented. The second speaker shares practical methods to select, apply and integrate sensors and control systems for implementing part measurement, die adjustment and part tracking for assuring improved part quality and reduced scrap rates.

Exploring the Advantages of In-Die Fastener Installations
Roger Patton – PennEngineering

Automatic In-Die Part-Quality Monitoring & Tool Adjustments
James Barrett – Link Systems Inc.

**TUESDAY, NOVEMBER 7**

**8:00 AM – 10:00 AM**

**$40: NEW! PRESS LINE OPTIMIZATION**

This presentation will cover topics on feedline optimization, die protection and setup sheets. If you could get 1 SPM more out of your press would you? That’s 60 more parts per hour, 480 parts per day, 24,000 parts per year (based on an 8 hour day). This two hour presentation will provide helpful hints and tips on how to get the most from your line by presenting the intricacies of indexing, die protection schemes and efficient setup.

Rob Meyer – Nidec Minster Corp.

**$41: CUTTING & PUNCHING TECHNOLOGY**

Attendees will learn what clearances to use to improve the punch productivity in their metal-stamping applications and how to reduce punch wear. This session also includes information regarding abrasive and adhesive wear issues and the comparisons of characteristics of tool steels and why you might need to change a tool steel for a specific application.

Joel Cegielski – Dayton Lamina
**STAMPING**

**TUESDAY, NOVEMBER 7**

10:30 AM – 12:30 PM

**$50: NEW! MACHINE MODERNIZATION & SAFEGUARDING**

This session provides information to determine if the refurbishment and modernization of existing transfer system capital is an ideal option. Learn how to review press requirements, safety standards, tooling design and feeding methods when the option to purchase a new transfer system is not in the budget. The second presentation covers primarily focuses on guards, devices, distance, location and opening requirements; main power disconnects; and motor starters and emergency stops with respect to ANSI B11.19 and NFPA 79.

**Reuutilization & Modernization of Existing Capital Equipment for Transfer Applications**
Bill Rogner – Atlas Technologies

**Machine Safeguarding Overview**
Roger Harrison – Rockford Systems, LLC

**$51: LUBRICATION TECHNOLOGY**

Attendees will learn about Lubrinomics, the science that studies the economic activity and strategies of lubrication, to gain an understanding of the processes that govern the production, distribution and consumption of metal-stamping lubricants. A second presentation examines the role metalworking fluids play in their respective processes and how their chemistries interact to contribute to the overall fluid performance. Gain insight into process improvements, problem solving, cost savings and potential implications of upcoming regulation.

**Lubrinomics – The Science of Lubrication & Economics in Metal Stamping**
Steve Lowery – Tower Metalworking Fluids

**Metalworking Fluid Technology, Now and into the Future**
Joseph Christy–Saviano, III and Adam Bringedahl – Biosolutions LLC

1:30 PM – 3:30 PM

**$60: NEW! EQUIPMENT INSTALLATION**

Proper installation of new equipment not only will influence the operation of the equipment itself, but also influence the impact on surrounding equipment and environment. Many considerations need to take place prior to installing the equipment. Is the equipment support critical? Does the foundation design require professional engineering? What are the machine requirements for stability, level, alignment and anchoring? What are the machine and environment considerations regarding vibrations? Answers to these questions and others will be presented.

Richard Haase – Unisorb Installation Technologies

**$61: NEW! TRANSFER DIE TECHNOLOGY**

Learn about the application and advantages of compact in-die transfer technology to win more work. See examples of the different types of compact in-die transfer applications and take away several real-world case studies. Hear real-world case studies for integrating sensors in both the die and part gripping tools for improvements in connectivity. The benefits of a connected transfer press will be discussed in the context of Industrial Internet of Things (IIoT), robotic transfers and factory automation.

**Compact In-Die Transfers – An Introduction to New Stamping Technology**
Robert Gunst – Jacar Systems LLC

**Sensors & Connectivity Improvements for Transfer Die Applications**
Will Healy, III. and Dave Bird – Balluff Inc.

**WEDNESDAY, NOVEMBER 8**

8:00 AM – 10:00 AM

**$70: NEW! METAL STAMPING FUNDAMENTALS**

This presentation will provide attendees with a fundamental understanding of metal-stamping processes, common industry terminology and general press shop operations. It is designed for those involved in purchasing, procurement, quality, sales, marketing, program management or other professional occupations not directly involved in the manufacturing process but who must specify, purchase, manage or control stamping processes, tools, and/or their related materials.

Peter Ulintz – Precision Metalforming Association

1:30 PM – 3:30 PM

**$71: DIE SENSING FUNDAMENTALS**

Attendees will learn how to get the most out of a die-protection system. This presentation details the proper use of control functions and features and identifies the most important factors to consider when selecting a system. Learn how to select and properly apply the right sensor for any application. The advantages and limitations of each sensor type, and tricks and tips for sensor selection, installation, wiring and maintenance will be discussed.

Jim Finnerty – Wintriss
STAMPING

10:30 AM – 12:30 PM

S80: NEW! MANUFACTURING ROI & TAX CREDITS

Learn the advantages of servo press technology and the factors directly impacting return on investment. Practical applications and part studies comparing the output of flywheel drive vs. servo drive presses and resulting payback analysis will be shared. Learn how to take advantage of the often-overlooked R&D tax credit available to contract manufacturers who qualify. This credit has many unique advantages specifically for job shop companies that build products for their customers. This session walks attendees through an identification process that may qualify your company for R&D tax credits that adds revenue to your bottom line.

Servo Press Technology – Return on Investment
Barry Lewalski – Schuler Inc.

As a Contract Manufacturer, Are You Leaving Money on the Table?
John Madsen – Black Line Group

S81: NEW! STAMPING, ASSEMBLY & ERROR–PROOFING

This session will cover financial considerations and best practices for stamping and assembly processes. Presenter will use real-life examples, pictures, video, technical and costing information to address the engineering, processing and financial considerations necessary to determine the metal stamping and assembly processes best suited to each specific application. The very latest error-proofing and zero PPM methods for metal stamping and fabricating companies will also be discussed, including how leading-edge metal stampers are using servomotors to automatically adjust tooling “on-the-fly” to compensate for changes in the material hardness, tensile, thickness, etc.

Solutions for High-Volume Metal Stamping and Assembly
Dave Thomas – Scott Technology, Ltd.

Error-Proof Metal Stamping: No Die Crashes & Zero PPMs
George Keremedjiev – Tecknow Education Services, Inc.

1:30 PM – 3:30 PM

S90: NEW! UNDERSTANDING METAL STAMPING PRESSES

Understand the proper function setup and use of a metal stamping press and learn how to quickly troubleshoot machine operational issues. You will learn how to level the slide face with the bed and acceptable tolerances, adjust the gib clearances and why that is important, and adjust counterbalance pressures to maximize machine and tool throughput. With this training you will be able to directly apply the knowledge gained to improve performance in your own operations.

Jeff Fredline – Industrial Maintenance Company, LLC

S91: NEW! ADVANCE FORMING TECHNOLOGIES

This multi-speaker session explores advances in several metalforming technologies. Presentations include, FLEXCELL, a solution for companies that require greater flexibility to stamp medium or small parts while maintaining maximum productivity, an innovative transfer technology, that utilizes linear motor technology; and an ROI-centric presentation on hot stamping, describing the right choice of equipment: automation, press, furnace, die technology – and considerations of the right labor concepts for training and launch support.

FLEXCELL: The Innovative Concept in Stamping Equipment – Flexibility, Productivity and Efficiency in One Single Installation
Victor Esteban – Fagor Arrasate USA, Inc.

A New and Flexible Way to Transfer Parts in a Transfer Press
Carl Best – Schuler Group

The Cool Way to Increase ROI with a Turnkey Hot Stamping Solution
Paul Thom – Schuler Inc.

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

S100: NEW! ADVANCEMENTS IN PRESS TECHNOLOGY

Learn how the cost of new stamping press equipment provides increased value to companies in terms of production output, cost of maintenance over older equipment and worker safety concerns. Recent speed advances in fineblanking technology and development promises to bring the benefits of fineblanking to a wider range of small components for which high production rates and low production cost may not have been favorable to this process in the past will also be discussed.

The Value of New Metalforming Equipment in the Press Room
Bryan Vezina – Schuler Group

Speed Advances Put Fineblanking in New Territory
Rudi Schubert – Feintool Corp.
**STAMPING**

**THURSDAY, NOVEMBER 9**

8:00 AM – 10:00 AM

$101: NEW! OPTIMIZING SENSOR LUBRICANT APPLICATIONS

This session addresses considerations for sensor selection in die-sensing applications and robotic welding processes where aluminum sheetmetal is used in stamping or fabrication processes. Learn how to choose the correct sensor technology based on aluminum/aluminum alloy specific detection and electronic measurement qualities required to achieve maximum machine up-time performance. The second presentation highlights the importance of sheetmetal lubrication and a newly developed spray technology. Discover how this technology is applied on current production equipment and the cost savings stampers are experiencing through several case studies presented.

**Considerations for Optimum Sensor Selection Used for in Die Sensing, Die Protection and in Robotic Weld Processes with Aluminum Fabrication**

Dave Bird and Shawn Day – Balluff, Inc.

**Sheetmetal Lubrication: Reducing Costs and Maintenance, While Improving Safety and the Environment**

Ron Demonet – Atlas Technologies, Inc.

10:30 AM – 12:30 PM

$110: NEW! PRESS DRIVE TECHNOLOGY

Learn the relevance of variable-speed drives in metalforming today, including: EC drive control and VFD control consideration, how EC drive offers flexibility throughout the press stroke and how position and speed controls increase productivity. Best practices in the selection of clutch and brake systems will also be covered. Learn how a manufacturing facility’s environment, personnel, attitude, skills, preventive maintenance programs and machinery should contribute to the evaluation and strategic decisions of the best clutch and brake system for that facility.

**Variable-Speed Drives Are Still Relevant Today**

Anthony Anniballi – Dynamatic/Drive Source International

**Clutch and Brake Evaluation & Selection for Your Metalforming Equipment**

Thomas Coyle, Sr. – BCN Technical Services, Inc., Schuler Group N.A.

**S111: NEW! SIMULATION & PROCESS DESIGN IMPROVEMENT**

Automotive light-weighting initiatives have led to the introduction of very high tensile-strength materials, such as Dual Phase 980. The use of these materials has increased reliance upon computer metalforming simulations for process feasibility analysis and process development. This session will address metal stamping process simulation from single parts to full process chain simulation, including springback analysis and compensation. Attendees will also learn key differences between A2, D2 and Matrix Steels and be offered some solutions to complex tooling problems.

**Springback Analysis and Compensation with Dual Phase Steel**

Dan Marinac – Forming Technologies Inc. (FTI)

**Process Design in Sheetmetal Forming, from Single Part to Full Process Chain Simulation**

Harald Porzner – ESI North America and Manfredi Biasutti – ESI GmbH

**Tool Steel for Improved Die Performance for AHSS**

Tom Bell – HITACHI

**STRUCTURAL STEEL/PLATE**

**MONDAY, NOVEMBER 6**

10:30 AM – 12:30 PM

F100: NEW! AISC MARKET OUTLOOK AND CERTIFICATION

Gain a clear insight into the future of the construction market and the challenges that will face the structural steel fabricator.

John Cross and Mark Trimble – AISC

1:30 PM – 3:30 PM

**F200: NEW! STRUCTURAL STEEL CASE STUDY**

Through the use of a case study, this session will review the structural steel fabrication technology that aided in the innovations which allowed for a 54 story office building unlike anything seen before in Chicago to be built.

Chris Simonson – Zalk Joseph Fabricators and Joe Jurasis – Chicago Steel Construction
TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM
F300: NEW! STRUCTURAL FABRICATION EQUIPMENT TECHNOLOGY
All facets of structural steel fabrication will be discussed in this session with a special focus on how machine tool technology is used to enable complex steel structures to be built.
Elliott Bass – Peddinghaus Corp. and Rick Boksa – Burlington Automation

1:30 PM – 3:30 PM
F400: STRUCTURAL STEEL SOFTWARE SOLUTIONS
Evaluate management systems for structural fabrication shops, including integration with design and engineering systems and other software that aids the fabricator. Through case studies, learn what is the best approach and fit for your fabrication shop.
Ian Coats – Autodesk and Todd White – Fabsuite

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM
F500: NEW! STEEL BEAM ASSEMBLY TECHNOLOGY
This session will use a case study to highlight how robotic welding is advancing the structural steel beam fabrication industry in light of the skilled worker shortage.
Andreas Hofer – Peddinghaus Corp. and Louis Dicaire – Avant–Garde Technologies

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM
F600: NEW! PLATE ROLLING OF STRUCTURAL STEEL
Learn techniques to increase your knowledge of plate rolling including methods such as using the plate roller type to your advantage, learning from the masters, and determining capabilities considering material type, among others. Also explore various plate rolling and bending technologies available to the structural fabricator.
How a Plate Rolling Rookie Becomes a Guru
Ken Pecho – Chicago Metal Rolled Products
Plate Rolling Technology for Structural Fabricators
Steve Bonnay – Davi, Inc.
WORKFORCE DEVELOPMENT

MONDAY, NOVEMBER 6

1:30 PM – 3:30 PM
F33: NEW! MANAGING CONFLICT AND DELEGATION STRATEGIES FOR EFFECTIVE LEADERSHIP (CONT’D) B

Mitigate the Noise in Your Organization
Marion Wells – Human Asset Management
Delegation Strategies to Be a More Effective Manager
Mark Ernst – Ernst Enterprises

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM
F43: NEW! LEADERSHIP ACTIONS TO TRANSFORM YOUR CULTURE AND CREATE EMPLOYEE ENGAGEMENT B

This session will provide strategies to create the right conditions for all members of your organization to give their best each day, committed to the organization’s goals and values, and form a culture to engage and retain your talent pool.

Transforming Your Culture: Leadership Actions to Accelerate and Sustain Results
Pete Winiarski – Win Enterprises, LLC
How to Create Employee Engagement
Charles DeBettignies – Gainsharing Inc.
Manufacturing Engagement: How to Retain Top Talent
Lisa Ryan – G r a t e g y . c o m

10:30 AM – 12:30 PM
F53: NEW! STRATEGIES FOR LEARNING AND LEVERAGING YOUR LEADERSHIP I

Effective leadership is about the ability to communicate a vision and have an organization understand and execute it. Develop strategies to leverage your management to become effective leaders and win the trust of your team.

Becoming a Learning Leader and Avoiding the Fatal Flaws of Failure
Joseph Mazzeo – Integrated Lean and Quality Solutions, LLC
Something’s Going to Change Around Here – The Five Stages to Leveraging Your Leadership
Liz Weber – Weber Business Services, LLC
Trust to Win, a Case Study of Success
Mark Ernst – Ernst Enterprises

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM
F73: NEW! ATTRACT, DEVELOP AND BUILD A HIGH PERFORMANCE MILLENNIAL TEAM B

With Millennials entering the workforce, it is imperative to learn what makes this new generation of employees motivated. This session will give you strategies to attract and develop the next generation of leaders and build a high performance team.

Attracting and Working with the Millennial Generation
Andrea Olson – Prag’madik
Developing the Next Generation Leader
Mark Ernst – Ernst Enterprises
Building a High Performance Team
David Gregor – Innovative Steel Detailing, Inc.

10:30 AM – 12:30 PM
F83: NEW! SIX KEYS TO TEAM LEADERSHIP AND EFFECTIVE WORKPLACE TEAMS B

Team leadership and structure are not easy. Populating teams with the right people and skill sets is important; effectively leading them to achieve is vital. We will look at several ways team leaders can manage cross-functional, intra-departmental and even multi-cultural team situations to realize meaningful business results. The six keys include; Vision, Context, People, Design, Execution and Celebration.

Cullen Hackler – PEI

WORKFORCE DEVELOPMENT
F93: NEW! COMMUNICATE, BUILD ACCOUNTABILITY AND CONDUCT MEANINGFUL EVALUATIONS IN YOUR ORGANIZATION

Communication and accountability are keys to a successful organization. This session will provide tools to communicate for impact; build accountability into your organization and conduct legal and meaningful employee evaluations.

Everyone Communicates, Few Connect – Communicating for Impact and Results
Kemi Sorinmade – The Growth Studio

Conducting Legal, Meaningful Employee Evaluations
Richard Alaniz – Alaniz Schraeder Linker Farris Mayes, L.L.P.

How to Build Accountability into Your Organization
Mark Ernst – Ernst Enterprises

F103: NEW! 6 STEPS TO HIRING AND THE NEW GIG ECONOMY

This session provides actionable steps to take back and improve your hiring process. Find out best practices in 6-Steps: preparing to recruit; recruiting/sourcing; screening for top talent; interviewing; assessing, and employment offer and on–boarding. In addition, hear about one of the hottest topics in talent management: “Gig Economy”, in which individual workers market their services and talents to buyers, typically for short duration, well-defined deliverables.

Manufacturing and the Gig Economy
Joseph Lampinen – KellyOCG

Every Job Deserves the Right Person: 6 Steps to Hire Better
Chuck Smith – NewHire
MONDAY, NOVEMBER 6

8:30 AM - 4:30 PM

W10: D1.1 – CODE CLINIC

This one day seminar will provide a "road map" through the Code, emphasizing the ability to locate important paragraphs, charts and tables quickly, which is crucial to understanding the code when working under stressful deadlines. In addition to practice questions, a practice exam will be administered, and the instructor will illustrate the use of the Code under time constraints, creating deadline pressure similar to the test environment. If you're taking the CWI exam, this clinic has proven to be valuable test preparation. As a leading construction code, D1.1 is the ideal tool to teach effective code use. NOTE: Clinic fee does not include a copy of the D1.1/D1.1M:2015 STRUCTURAL WELDING CODE-STEEL. D1.1 Code Book may be purchased from the AWS Technical Standards Sales Team at (800) 443-9353 ext. 280. Attendees will receive our study guide, AWS D1.1 Code Clinic Reference Manual.

TUESDAY, NOVEMBER 7

8:30 AM - 4:30 PM

W11: WHAT'S NEW IN THE 21ST EDITION OF API 1104

The 21st Edition of the API 1104 Standard features new technical information and requirements as well as new definitions, all presented in a single-column format. Rules for qualifying welding procedures will be reviewed, including emphasis on changes in essential variables and new tension testing options. Rules for qualifying welding personnel will also be reviewed, including the new rule that qualifies fixed-position welders for roll welding. New visual acuity requirements for NDE personnel will be explained as well. The biggest change in the 21st Edition is the detailed requirements for repair and removal of defects in Section 10. Repair procedures are now divided into four categories: full thickness repairs, internal partial thickness repairs, external partial thickness repairs and cover pass repairs. API 1104 now specifies the type and number of test specimens required for each type of repair welding procedure — and it gives detailed requirements for the contents of the welding procedure specification for each. The tests required include hardness tests of heat-affected zones, which are typically the most critical area of any repair. Requirements for the qualification of welders who perform repair welds are now specified. These will all be reviewed in detail.
THE WHY AND HOW OF WELDING PROCEDURE SPECIFICATIONS

W13: BEGINNER — 8:00 AM - 12:00 PM
W14: ADVANCED — 1:00 PM - 5:00 PM
W15: BEGINNER AND ADVANCED — 8:00 AM - 5:00 PM

Welding Procedure Specifications — Ensuring Consistent, Predictable Welding Processes Performance
As a welding professional who is constantly responding to customer demands for increasing the performance and quality of weldments while controlling costs, optimizing your WELDING PROCEDURE SPECIFICATIONS (WPSs) for performance and profitability may be the key. A well written WPS Defines, Measures, Analyzes, Improves, & Controls quality in the welding process. This two-part workshop revisits the fundamentals of WPSs for both the seasoned professional and for those individuals seeking to become more proficient in the authoring and application of a WPS in fabrication as well as hands on approach to advanced instruction in the formulation and writing of WPSs in the afternoon.

TUESDAY, NOVEMBER 7 – WEDNESDAY, NOVEMBER 8
8:30 AM - 4:30 PM

W16: APPLICATIONS OF STAINLESS STEEL WELDING
This seminar comprises two separate days (or parts): AWS D1.6.2017 and Basic Stainless Steel Welding followed by Reducing Stainless Steel Welding Defects. The program focuses on the basic weldability of the five types of stainless steels, with emphasis on the 300 series austenitic stainless steels. This session is invaluable to welders, engineers, and inspectors working with all stainless steels, not just those used for structural welding. Books to be provided are AWS D1.6.2017 and Professional’s Advisor on Welding of Stainless Steels.

8:30 AM - 4:30 PM

W17: ASME SECTION IX, B31.1 & B31.3 CODE CLINIC
This 16-hour seminar will help you prepare for the ASME Section IX, B31.1, and B31.3 examination for endorsement or Part C of the CWI. Note that endorsements are supplemental inspection credentials available to AWS Certified Welding Inspectors (CWIs) and Senior Certified Welding Inspectors (SCWIs), but non-CWI/SCWIs can also participate in the seminar and examination to enhance their educational background. Participants are expected to provide their own codebooks. Please note that there is a separate application and fee required to take the Certification Exam.

WEDNESDAY, NOVEMBER 8
8:00 AM - 12:00 PM

W18: ETHICS SEMINAR FOR CERTIFIED WELDING INSPECTORS – PART A
Working in the field as a Certified Welding Inspector is a very rewarding undertaking. However, it is wrought with perils relating not only to personal safety but also professionally, involving ethical decisions which could potentially injure or even destroy your professional reputation. The AWS QC-1 code of ethics will be reviewed. Then this conference will use a panel to discuss scenarios and answer questions regarding ethical situations relating to the Certified Welding Inspector.

1:00 PM - 5:00 PM

W19: WHAT TO EXPECT AS A NEW CERTIFIED WELDING INSPECTOR – PART B
This course/discussion will supply Insights, directions and recommendations for the fledgling Certified Welding Inspector. If you have just accomplished your AWS QC-1 Certified Welding Inspector goal this conference is for you. After long hours of studying, a week-long refresher course and a rigorous 6-hour exam. You were then awaiting your outcome for eight long stress filled days you finally receive word: YOU PASSED! You spend a week or so basking in the warm comfort of success as the thought slowly creeps in on you. “Now that I have the CWI what should I do with it and how do I do it? This Seminar will supply strategies, information and recommendations on how to proceed with your new credential.
WELDING SEMINARS

WEDNESDAY, NOVEMBER 8

8:30 AM - 4:30 PM

W21: THE VISUAL INSPECTION WORKSHOP

An 8-hour course for CWI exam candidates to review the basic concepts and applications of visual inspection. After a discussion of the limitations and advantages of visual inspection, types of weld data that may be obtained by visual inspection are presented and discussed. Includes the many types of discontinuities encountered during the visual inspection of welds. Common tools used for visual inspection are presented and discussed (a machinist’s scale, dial calipers, micrometers, fillet weld gauges, the Palmgren gauge, and the V-WAC). Participants will use these gages to make measurements on weld replicas. This will prepare candidates for Part “B” of the exam. A sample weld specification containing acceptance criteria is presented and discussed, after which students use the specification and visual inspection tools to evaluate the weld replicas using a series of specific questions and scenarios.

8:30AM - 4:30PM

W22: FUNDAMENTALS OF LIQUID PENETRANT TESTING FOR CWI’S AND QUALITY ASSURANCE PERSONNEL

The purpose of this workshop is to provide the fundamental knowledge of penetrant testing required by Certified Welding Inspectors and quality assurance and test personnel to enable them to: ascertain that the proper test technique, or combination of techniques, is being used to assure the quality of the finished product; interpret, evaluate, and make a sound decision as to the results of any liquid penetrant test; and recognize those areas of doubtful test results that require either retest or assistance in interpretation and evaluation.

THURSDAY, NOVEMBER 9

8:00 AM - 4:00 PM

W23: FUNDAMENTALS OF RADIOGRAPHIC INSPECTION FOR CWI’S AND QUALITY ASSURANCE PERSONNEL

The purpose of this workshop is to provide the fundamental knowledge of radiography required by Certified Welding Inspectors and quality assurance and test personnel to enable them to: ascertain that the proper test technique, or combination of techniques, is being used to assure the quality of the finished product; interpret, evaluate, and make a sound decision as to the results of any radiographic test; and recognize those areas of doubtful test results that require either retest or assistance in interpretation and evaluation.

CONFERENCES

MONDAY, NOVEMBER 6

1:00 PM – 5:00 PM

W25: THERMAL SPRAY COATINGS - FREE

This group will discuss most aspects of thermal spray coatings including thermal spray processes, equipment, pre and post treatment, applications, and industry usage.

TUESDAY, NOVEMBER 7

8:00 AM – 3:00 PM

W24: TUBULAR STRUCTURES CONFERENCE

Experts Come Together for Conference on Pipe and Tubing

Three key experts will lead this conference. Bill Newell, the chairman of the 90 plus-person D10 Committee on Piping and Tubing, will deliver the keynote address. Newell will be joined by Allen Sindel, the chairman of the ever popular D1 Structural Welding Committee, another 96-plus person committee. He will discuss the tubular construction of buildings, a forthcoming market for welded tubing. A third expert, Jeff Henry, will share some interesting developments which could solve some of the problems troubling many fabricators. Other topics will include induction bending of pipe, the use of Tip TIG and Spinarc welding, laser welding, and some new developments in orbital systems.
RWMA RESISTANCE WELDING SCHOOL

TUESDAY, NOVEMBER 7 –
8:00 AM - 5:00 PM

WEDNESDAY, NOVEMBER 8 –
8:00 AM - 4:15 PM

W26: RWMA RESISTANCE WELDING SCHOOL

RWMA offers this intensive two-day course about the basics of resistance welding once a year. The school is designed to give operators, production supervisors, engineers, and others the opportunity to study, better understand, and further their knowledge in the theory, applications, and equipment used in the resistance welding process. This intense learning atmosphere will better prepare the unfamiliar and further educate the experienced. The first day of this school introduces the processes and machines, materials, electrodes and power systems associated with resistance welding. The second day of this school discussion welding controls, quality standards, machine set-up, and maintenance topics.

WORKSHOP

TUESDAY, NOVEMBER 7

8:00 AM – 12:00 PM

AWF100: LASER WELDING FOR TODAY’S FABRICATOR WORKSHOP

This workshop is full of experts covering the latest advancements on laser welding. Topics include: design consideration, industrial laser welding, laser sources for fiber, disk and diode, system overview, hybrid laser welding and additive technologies. Attendees will have additional time to discuss any application with the experts.

Essential Considerations for Laser Welding: From Component Design to Implementation
David Havrilak – TRUMPF Inc.

Introduction to Industrial Laser Welding
Tom Kugler – Laser Mechanisms, Inc.

Laser Sources for Industrial Laser Welding: Fiber, Disk and Diode
Jean-Philippe Lavoie – Coherent

System Overview for Laser Welding
Mark Rodighiero – Amada Miyachi America

Material Selection for Laser Welding
Geoff Shannon – Amada Miyachi America

Hybrid Laser Welding
Paul Denney – Lincoln Electric

Laser Welding and Additive Technologies
Wayne Penn – Alabama Laser
PROFESSIONAL PROGRAM

Pick and choose between concurrent sessions for the latest in welding research and commercial developments. Pay by the day or attend the entire four-day program, with special discounts for students and members of AWS, FMA, SME, PMA, or CCAI.

4-Day Professional Program: W31
4-Day Student Professional Program: W32

MONDAY, NOVEMBER 6

SESSION 1: ADDITIVE MANUFACTURING

Chairs: P. Hochanadel (Los Alamos National Laboratory), T. Palmer (Penn State University)

1A. 2:00 PM Cracking Behavior of High Gamma Prime Ni-Base Superalloys Fabricated through Additive Manufacturing
M. Kirka, D. Greeley, R. Dehoff, Y. Lee and A. Okello, Oak Ridge National Laboratory

1B. 2:20 PM TEM/STEM Characterization of 316L Stainless Steel Laser Additive Manufacturing Components
Thomas J. Lienert and Terry G. Holesinger, Los Alamos National Laboratory

1C. 2:40 PM Welding Differences between Wrought and Additive Manufactured 304L
C. Hawk and S. Liu, Colorado School of Mines; D. Javernick, Los Alamos National Laboratory

1D. 3:00 PM Role of Scan Strategy on Thermal Gradient and Solidification Rate in Electron Beam Melting
Yousub Lee, M. M. Kirka, R.B. Dinwiddie, N. Raghavan; R.B. Dehoff, Oak Ridge National Laboratory

1E. 3:20 PM In-situ and Ex-situ Characterization of Metal Additive Manufacturing
Sarah Foster, J. Raplee and S.S. Babu, The University of Tennessee-Knoxville; R. Dinwiddie and R.R. Dehoff, Oak Ridge National Laboratory

1F. 3:40 PM The Role of Robotics in Large Scale Metal Arc Additive Manufacturing
Andrzej Nycz, Mark Noakes, and Bradley Richardson, Oak Ridge National Laboratory; S.S. Babu, The University of Tennessee-Knoxville

1G. 4:00 PM Topology Optimization for Additive Manufacturing for Ti64 in EBM
S. Yoder, The University of Tennessee-Knoxville

1H. 4:20 PM Compositonally Graded Transition Joints Between 2.25Cr-1Mo Steel and Alloy 800H Using Additive Manufacturing
J. Zuback, T. Palmer and T. DebRoy, Pennsylvania State University

1I. 4:40 PM Fabrication of Steel Welds in the Solid State Using Ultrasonic Additive Manufacturing
N. Sridharan, Oak Ridge National Laboratory; Tyler, M. Dapino, The Ohio State University; S. Babu, The University of Tennessee-Knoxville

SESSION 2: MODELING I

Chairs: Y. Yang (EWI), E. Pfeif (National Institute of Standards and Technology)

2A. 2:00 PM Addressing Weldability Challenges in the Nuclear Power Industry with Computational Materials Engineering Tools
A. Hope, Thermo-Calc Software; B. Sutton, Electric Power Research Institute

2B. 2:20 PM Numerical Modeling and Microstructure Control in Additive Manufacturing
N. Raghavan, A. Plotkowski and S. Babu, University of Tennessee-Knoxville; J. Turner and Y. Lee, Oak Ridge National Laboratory

2C. 2:40 PM Stamp-Weld Coupled Analysis for Automotive Components: Using Welding Process as a Strategy to Reduce Deformation of Welded Sheet Metal Assemblies
Y. Gooroochurn, T. Mao, N. Rajagopal, V. Tunga and M. Doroudian, ESI Group

2D. 3:00 PM NIST Alloys Data Web Application
E. Pfeif, B. Wilthan, S. Townsend, V. Diky and K. Kroenlein, National Institute of Standards and Technology

2E. 3:20 PM Development of a Process Model for Mismatch Welding
A. Kuprienko, H. Song, and W. Zhang, The Ohio State University; B. Krakauer and J. Scott, AO Smith

2F. 3:40 PM Numerical Simulation of Nugget Growth and Hardness in Resistance Spot Welding of Hot Stamped Boron Steel in 2T and 3T Stack-up
Y. Lu, A. Peer, M. Kimchi and W. Zhang, The Ohio State University; T. Abke, Honda R&D Americas, Inc.

2G. 4:00 PM Development of Advanced Processes and Models for Weld Repair of Highly Irradiated Light Water Reactor Components
J. Tatman and G. Fredrick, Electric Power Research Institute; J. Chen and Z. Feng, Oak Ridge National Institute Laboratory; Z. Chen, University of Tennessee -Knoxville

2H. 4:20 PM Engineering Expressions Based on Fundamental Physics for Characteristic Values of a Moving Point Heat Source
Y. Wang, P. Mendez and Y. Lu, University of Alberta

2I. 4:40 PM Numerical Analysis of Plasma Arc Properties under Additional Constraint of Keyhole
B. Xu, F. Jiang and S. Chen, Beijing University of Technology
SESSION 3: FRICTION STIR AND SOLID STATE WELDING

Chairs: Z. Yu (Colorado School of Mines), W. Tang (Oak Ridge National Laboratory)

3A. 2:00 PM Dynamic Recrystallization During Friction Stir Welding of AZ31B Mg Alloy
H. Choo, Y. Li and P. Hou, University of Tennessee-Knoxville; Z. Wu and Z. Feng, Oak Ridge National Laboratory

C. Wu, L. Shi and C. Zhang, Institute of Materials Joining, Shandong University

3C. 2:40 PM Toward a Comprehensive Understanding of Bond Formation During Inertia Friction Welding through Interrupted Welding Trials
D. Tung and W. Zhang, The Ohio State University; D. Mahaffey, O. Senkov, and S. Semiatin, Air Force Research Laboratory

3D. 3:00 PM Variability of Resistance Spot Weld Cross Tension Testing
S. Tate, AK Steel

3E. 3:20 PM Avoiding Intermetallics: Welding Al-Steel Joints with FSW and VFAW
G. Lee, A. Nassare, G. Daehn, A. Vivek and A. Ramirez, The Ohio State University; E. Torres, Instituto Tecnologico Metropolitano

3F. 3:40 PM Investigation of Interfacial Bonding in Micro- Friction Stir Blind Riveting
H. Khan, K. Wang and J. Li, Pennsylvania State University

3G. 4:00 PM Intermetallics in Steel-to-Aluminum Friction Stir Welds
K. Oyedemi, Y. Adonyi and P. Wang, LeTourneau University

3H. 4:20 PM Recent Progress on Numerical Simulation of the Material Flow During Friction Stir Welding for Predicting the Tunnel-Defects
Q. Shi, G. Chen, S. Zhang and Y. Zhu, Tsinghua University

3I. 4:40 PM Enhanced Mechanical Properties of Cr3 Steel Used for Support Roller by Friction Stir Processing
R. Fu and Y. Li, Yanshan University

SESSION 4: ARC WELDING

Chairs: J. Xiao (Beijing University of Technology), J. Farren (Naval Surface Warfare Center Carderock Division)

4A. 8:00 AM Piezo-Driven Metal Transfer: An Innovative GMAW Process
J. Xiao, Y. Zeng and S. Chen, Beijing University of Technology

4B. 8:20 AM Comparative Study of Metal Transfer in Aluminum GMAW Consumables
C. McIntosh, Lincoln Electric Company

4C. 8:40 AM Arc Behavior and Metal Transfer in Multi-electrodes Welding Process
S. Chen, Beijing University of Technology

4D. 9:00 AM The Dynamic Droplet Transfer Behavior of CWW CO2 Welding
Z. Yang, C. Fang, Y. Chen, Z. Zhang and Y. Gao, Jiangsu University of Science and Technology

4E. 9:20 AM Hot Wire GTA Process and Composition Effects on Low Oxygen Microstructure
D. White and S. Liu, Colorado School of Mines

4F. 9:40 AM Deep Penetration TIG Welding of 2101 Duplex Stainless Steel
S. Cui and Y. Shi, South China University of Technology

4G. 10:00 AM Effects of Activating Flux on Surface Tension of Molten Pool in Gas Tungsten Arc Welding
Y. Shi, C. Li and Y. Gu, Lanzhou University

4H. 10:20 AM The Effect of Surface Tension on Molten Depression with High Frequency Pulsed Arc Welding
M. Yang, L. Li, B. Qi and H. Zheng, Beijing University of Aeronautics and Astronautics

4I. 10:40 AM Thermal-Mechanical Output Properties in Different Polarity of Variable Polarity Plasma Arc Welding
F. Jiang, B. Xu and S. Chen, Beijing University of Technology

4J. 11:00 AM Challenges Associated with Hot Extraction of Diffusible Hydrogen
J. Farren, M. Sinfield and D. Bechetti, Naval Surface Warfare Center Carderock Division

4K. 11:20 AM Estimations of Anode and Cathode Voltage Falls in SAW
D. Havrylov and P. Mendez, University of Alberta

4L. 11:40 AM Welding Galvanized Steels with a Novel AC Welding Process
Y. Liao, B. Narayanan, V. Rajan and J. Henry, Lincoln Electric Company
SESSION 5: WELDING METALLURGY & WELDABILITY

Chairs: B. Alexandrov (The Ohio State University), M. Sinfield (Naval Surface Warfare Center Carderock Division)

5A. 8:00 AM Assessing the Impact of Boron Micro-Alloying Additions on the Weldability of 304L Austenitic Stainless Steel
J. Rodelas, M. Maguire, J. Michael, P. Duran and R. Grant, Sandia National Laboratories

5B. 8:20 AM Solidification Behavior of High Entropy Alloys
C. Fink and J. Oliveira, The Ohio State University; A. Hope, Thermo-Calc Software

5C. 8:40 AM Application of Scandium Additions to Al-Mg Filler Alloys for Welding High Strength 5XXX and 7XXX Aluminum Alloys
F. Armao, Lincoln Electric Company

5D. 9:00 AM Retention of Delta Ferrite in 410SS Welds
D. Stone and B. Alexandrov, The Ohio State University

5E. 9:20 AM Microstructure and Mechanical Properties of Fe–10Ni Steel Additively Manufactured using Laser Powder Bed Fusion (L-PBF)
D. Bechetti and M., Naval Surface Warfare Center Carderock Division

5F. 9:40 AM Grain Orientation Effects Regarding Backfilling Effectiveness in Ni–30Cr Weld Metals Backfilling Effectiveness Based on Grain Orientation and Eutectic Liquid Properties in Ni–30Cr Weld Metal
R. Wheeling and J. Lippold, The Ohio State University

5G. 10:00 AM Intercritical Heat-Affected Zone and Type IV Cracking in Grade 91 Steel
Y. Wang and L. Li, University of Alberta

5H. 10:20 AM Quantification of the Susceptibility to Ductility Dip Cracking in Weld Overlays of Ni-based Alloys
S. Luther and B. Alexandrov, The Ohio State University

5I. 10:40 AM Effect of Niobium on Weld Metal Microstructure and Properties of Submerged Arc Welds in X70 Steel
T. Patterson and J. Lippold, The Ohio State University

5J. 11:00 AM Fe-Ni Steel Welding Consumable Development for High-Strength, Low Service Temperature Applications
M. Sinfield, J. Farren and D. Bechetti, Naval Surface Warfare Center Carderock Division; P. Ray, Carpenter Technology Corporation

5K. 11:20 AM The Effect of Inclusions and Residual Composition on Creep Cavity Nucleation and Their Relationship with Increased Failure Susceptibility in Grade 91 Steels
G. Abreu Faria, B. Alexandrov and A. Ramirez, The Ohio State University; J. Siefert and J. Parker, Electric Power Research Institute

5L. 11:40 AM Research on the Effect of the Intermetallic Compounds on the Weld-Edge Cracking Mechanism of Magnesium Alloys
T. Yuan, X. Wang, S. Chen and Y. Zhao, Beijing University of Technology

SESSION 6: HONORARY SYMPOSIA FOR DR. S. DAVID AND PROF. T. DEBROY - JOINT SESSION A

Chairs: M. Tumuluru (United Steel Corporation), T. Palmer (Penn State University)

6A. 8:00 AM Intro - David’s Contribution to Welding Research & Science
M. Tumuluru, United Steel Corporation

6B. 8:10 AM Intro - DebRoy’s Contribution to Welding Research & Science
T. Palmer, Pennsylvania State University

6C. 8:20 AM Advances in Welding Science and Technology - A Personal Journey of Three Decades
T. Zacharia, Oak Ridge National Laboratory

6D. 9:00 AM A Retrospective on Welding Metallurgy
J. Lippold, The Ohio State University

6E. 9:40 AM Role of Weld Solidification Science in Metal Additive Manufacturing - Review
S. Babu, University of Tennessee-Knoxville

6F. 10:20 AM Microstructure Development in Steel Welds
T. Koseki, The University of Tokyo

6G. 11:00 AM Integrated Computational Welding Engineering – A Modeling Framework to Advance Materials Joining Science and Technology
Z. Feng, Oak Ridge National Laboratory

6F. 11:40 AM Dissimilar Metal Welds for Oil and Gas, and Power Generation Applications
B. Alexandrov, The Ohio State University
SESSION 7: INDUSTRIAL TECHNOLOGIES

Chairs: M. Sinfield (Naval Surface Warfare Center Carderock Division), N. Porter (EWI)

7A. 2:00 PM Taking Advantage of Clauses in the D17.2 MIL-SPEC for Resistance Welding to Eliminate Destructive Testing, Improve Weld Quality, and Reduce Machine Maintenance Requirements
R. Cohen, WeldComputer Corporation

7B. 2:20 PM Design Consideration for Resistance Welding
R. Michelena, T.J. Snow Co., Inc.

7C. 2:40 PM How to Maximize Resistance Seam Welding Production Speeds and Improve Weld Quality
R. Cohen, WeldComputer Corporation

7D. 3:00 PM High-Speed, High-Quality Welding of Copper-Nickel Pipe Joints
N. Kapustka, EWI

7E. 3:20 PM Study on Influence of Boron for Hot Crack Sensitivity of Carbon Steel Welds
S. Park, Y. Cho, C. Jee and S. Shin, Hyundai Heavy Industries Co., LTD

7F. 3:40 PM Development of Microhardness Acceptance Criteria for Temper Bead Weld Qualification
B. Smith, The Ohio State University; B. Sutton and S. McCraken, Co-PI

7G. 4:00 PM Fume and Dust Extraction Fundamentals for Metal Fabrication Operations
By R. Williamson, N. LLC and D. Rousseau, Nederman ABB

7H. 4:20 PM How to Increase Flash Welding Performance While Reducing Energy Utilization
R. Cohen, WeldComputer Corporation

8A. 2:00 PM Controlled Directional Solidification of Hypo-Peritectic and Hyper-Peritectic Alloys
H. Brody and P. Shahbeigi-Roodposhti, University of Connecticut

8B. 2:40 PM A Study of Liquid Metal Embrittlement Cracking in Advanced High Strength Steel Welds
M. Tumuluru, United States Steel Corporation

SESSION 8: HONORARY SYMPOSIUM FOR DR. STAN DAVID – SESSION B

Chairs: Z. Yang (Caterpillar), W. Zhang (The Ohio State University)

9A. 2:00 PM Assessment of Tool Durability in Friction Stir Welding
A. De, Indian Institute of Technology Bombay

9B. 2:40 PM Improving Deposition Rate and Efficiency in Gas Metal Arc Welding of Al 5083 Alloy
C. Kim, Korea Institute of Industrial Technology

9C. 3:20 PM Mechanisms of Thermal-Electrical-Mechanical-Metallurgical Coupling during Resistance Spot Welding
P. Wei, National Sun Yat-Sen University

9D. 4:00 PM Effect of Beam Oscillation on Electron Beam Welded Similar/ Dissimilar Joints
G. Gopal Roy and J. Kar, Indian Institute of Technology

SESSION 10: PLENARY SESSION

Chairs: T. Lienert (Los Alamos National Laboratory), J. Perdomo (ExxonMobil)

10A. 8:00 AM Welcome to Plenary and A Tribute to Two “Giants” of Welding Science: Dr. S. David and Prof. T. DebRoy
T. Lienert, Los Alamos National Laboratory

10B. 8:10 AM Advancing the Science of Welding: The Legacy of Stan David and Tarasankar DebRoy
J. Vitek, Oak Ridge National Laboratory

10C. 8:50 AM The Effects of Reduced Pressure and Shielding Gas Type on Laser Weld Porosity and Weld Geometry
J. Elmer, Lawrence Livermore National Laboratory
PROFESSIONAL PROGRAM

WEDNESDAY, NOVEMBER 8

SESSION 11: LASER WELDING/ADDITIVE MANUFACTURING

Chairs: P. Hochanadel (Los Alamos National Laboratory), J. Li (Penn State University)

11A. 9:40 AM Analysis of Maximum Temperature under a Gaussian Source in Laser Beam Processes
Y. Lu, P. Mendez and Y. Wang, University of Alberta

11B. 10:00 AM Laser Weldability Testing of Austenitic Nickel Alloys

11C. 10:20 AM Laser Welding of Shape Memory Alloys
J. Pedro Oliveira, The Ohio State University

11D. 10:40 AM Development of a Standard Weldability Test Procedure for Laser Powder-Bed Fusion Applications
B. Kemerling and J. Lippold, The Ohio State University

11E. 11:00 AM Effect of Segregation on the Welding of Selective Laser Melted Stainless Steel Alloys
D. Gonzales, Colorado School of Mines

11F. 11:20 AM Role of Metal Evaporation and Condensation during Laser Additive Manufacturing
D. Galicki, A. Plotkowski, N. Raghavan and S. Babu, University of Tennessee-Knoxville; F. List, Oak Ridge National Laboratory

11G. 11:40 AM Laser Hybrid Welding
H. Wang, Gang Song, Z. Hou and Y. Zhang, Dalian University of Technology

SESSION 12: HONORARY SYMPOSIUM FOR DR. S. DAVID - SESSION C

Chairs: J. Chen (Oak Ridge National Laboratory)

12A. 9:40 AM Metal Additive Manufacturing for Aerospace
B. Ribic, Rolls Royce Corporation

12B. 10:00 AM Efficient Prediction of Solidification Conditions in Metal Additive Manufacturing
A. Plotkowski and S. Babu, University of Tennessee-Knoxville

12C. 10:20 AM Welding and Joining Technologies in Heavy and Smart Machinery
Z. Yang and T. Hong, Caterpillar Inc.

12D. 9:00 AM Friction Stir Welding Technology for High Pressure Gas Storage Application
Y. Chae Lim and Z. Feng, Oak Ridge National Laboratory; M. Miles, Brigham Young University; X. Liu, University of Michigan; Y. Li, Shanghai Jiao Tong University

12E. 9:20 AM Weld Creep Performance Modeling of Creep Strength Enhanced Ferritic Steel
X. Yu and Z. Feng, Oak Ridge National Laboratory

12F. 9:40 AM Influence of the Welding Thermal Cycle on the Cross-Weld Creep Performance in Grade 91 Steel
J. Siefert and J. Parker, Electric Power Research Institute; Rachel Thomson, Loughborough University

12G. 10:00 AM Intelligent Weld Manufacturing: Role of Integrated Computational Welding Engineering
J. Chen, Oak Ridge National Laboratory

SESSION 13: HONORARY SYMPOSIUM FOR PROF. DEBROY - SESSION C

Chairs: A. De (Indian Institute of Technology - Bombay), P. Wei (National Sun Yat-Sen University)

13A. 9:40 AM Ultrasonic Grain Refining
K. Manchiraju and M. Powell, Southwire Company; Q. Han, Purdue University

13B. 10:00 AM Efficient Prediction of Solidification Conditions in Metal Additive Manufacturing
A. Plotkowski and S. Babu, University of Tennessee-Knoxville

13C. 10:20 AM Welding and Joining Technologies in Heavy and Smart Machinery
Z. Yang and T. Hong, Caterpillar Inc.

13D. 10:40 AM Building a Digital Twin of Additive Manufacturing
G. Knapp, Pennsylvania State University

13E. 11:00 AM Root Defect Formation in 304L Stainless Steel
J. Blecher, 3D Systems; T. Palmer, Applied Research Lab; T. DebRoy, Pennsylvania State University

13F. 11:20 AM A Numerical Approach to Fabricate Defect Free and Structurally Sound Components by Additive Manufacturing
T. Mukherjee, V. Manvalkar, T. DebRoy and A. De, Pennsylvania State University
SESSION 14: OVERLAY AND CLADDING

Chairs: G. Woods (University of Alberta), M. Grams (University of Alberta)

14A. 2:00 PM Temper Bead Welding for Weld Overlays
J. Stewart and B. Alexandrov, The Ohio State University

14B. 2:20 PM Hydrogen Assisted Cracking of Dissimilar Metal Welds Between Grade F65 Steel and Low Alloy Steel Overlays Using Alloy 625 Filler Wire
R. Buntain and B. Alexandrov, The Ohio State University

14C. 2:40 PM Growth Mechanism of Primary Carbides in Chromium Carbide Overlays
N. Barnes and P. Mendez, University of Alberta; S. Clark and S. Seetharaman, University of Warwick

14D. 3:00 PM Joining of Internally Clad X65 Pipes Using Low Alloy Steel Consumable
A. Alvarez and B. Alexandrov, The Ohio State University

14E. 3:20 PM Heat Affected Zone Sensitization of Type 405 Stainless Steel Cladding in an Overlay-Repaired Coke Drum
Y. Wang, R. Kannan and L. Li, University of Alberta; Y. Suzuk and D. Ting, Suncor Energy

14F. 3:40 PM Dispelling the Fears of Hydrogen in Shielding Gases for Corrosion-Resistant Overlays on High Strength Steels
D. Hebble, D. Allford and R. Holdren, Arc Specialties, Inc.

SESSION 15: DISSIMILAR JOINING

Chairs: L. Li (University of Alberta), W. Tan (Utah State University)

15A. 2:00 PM Hydrogen Assisted Cracking in Dissimilar Metal Welds Used in the Oil and Gas Industry
C. Boster, The Ohio State University

15B. 2:20 PM Intermetallic Characterization in Metal-to-Ceramic Microwave Joining
I. Reiman, I. Thompson and Y. Adonyi, LeTourneau University; Collin Overstreet, Wellbore Technologies

15C. 2:40 PM Experimental Measurements and FEA Modeling of Fracture Mechanics of Brazed Joints in Ni-based Superalloys for Gas Turbine Applications
B. Riggs, B. Alexandrov and A. Benatar, The Ohio State University; R. Xu, Rolls-Royce Corporation

15D. 3:00 PM Recent Progress of Multi-Material Joining R&D for Lightweight Vehicle Application
Y. Chae Lim and Z. Feng, Oak Ridge National Laboratory; M. Miles, Brigham Young University; X. Liu, University of Michigan; Y. Li, Shanghai Jiao Tong University

15E. 3:20 PM Microstructural Evolution near the Fusion Boundary of Grade 91 Steel Dissimilar Metal Welds with Nickel Filler Metals
M. Kuper, M. Mills and B. Alexandrov, The Ohio State University; J. Burgess, GE Power

W. Tan, University of Utah

15G. 4:00 PM Study of High Temperature Deformation Behavior of Graded Transition Joints (GTJ)
M. Srinivasan and S. Babu, University of Tennessee-Knoxville; J. Gallar and J. DuPont, Lehigh University; Z. Feng, Oak Ridge National Laboratory

SESSION 16: HONORARY SYMPOSIA FOR DR. S. DAVID AND PROF. T. DEBROY - JOINT SESSION D

Chairs: M. Tumuluru (United States Steel Corporation), B. Ribic (Rolls Royce)

16A. 2:00 PM Technology Innovation Built around Vaporization in Laser Welding of NiTi Alloys
N. Zhou, University of Waterloo

16B. 2:40 PM A Simple Test for Solidification Cracking Susceptibility and Filler Metal Effectiveness
S. Kou and T. Soysal, University of Wisconsin

16C. 3:20 PM Analysis of Low Transformation Temperature Welding (LTTW) Consumables - Evolution of Residual Stresses
S. Liu, Colorado School of Mines

16D. 4:00 PM Toward Intelligent Welding Manufacturing
Y. Zhang, University of Kentucky

16E. 4:40 PM Non-Equilibrium Phase Transformation Behavior in DP980 AHSS
Z. Yu, Colorado School of Mines; J. Vitek, K. An, Z. Feng and S. David, Oak Ridge National Laboratory

16F. 5:00 PM Transport Phenomena in Molten Pool from Fusion Welding to Additive Manufacturing
W. Zhang, Y. Li and K. Zhang, The Ohio State University; Y. Lee, Oak Ridge National Laboratory
PROFESSIONAL PROGRAM

THURSDAY, NOVEMBER 9

SESSION 17: SENSING AND CONTROL

Chairs: J. Chen (Oak Ridge National Laboratory), Z.J. Wang (Tianjin University)

17A. 8:00 AM Welding Process Monitoring and Control Using Optical Sensing Techniques
J. Chen and Z. Feng, Oak Ridge National Laboratory

17B. 8:20 AM Modeling and Control of Reflecting Weld Pool Surface Vibration
J. Chen, J. Chen and Z. Feng, Oak Ridge National Laboratory

17C. 8:40 AM Real-time Measurement of Weld Pool Oscillation Frequency in GTA W-P Process
C. Li, Y. Shi and Y. Gu, Lanzhou City

17D. 9:00 AM Weld Pool Sensing for Penetration Control in Pulsed Gas Metal Arc Welding
Z. Wang, P. Bai, S. Hu and T. Lu, Tianjin University

17E. 9:20 AM Molten Pool Morphology and Characteristics of CWW CO2 Welding
C. Fang, Jiangsu University of Science and Technology

17F. 9:40 AM Double-Sided Dual Laser Pulse Driven Droplet Transfer in GMAW
Y. J. Shujun Chen, J. Xiao, Y. Zeng, L. Wang and S. Chen, Beijing University of Technology

17G. 10:00 AM High Speed Videography of Welding: Fundamentals and Techniques
S. Guest, Stantec; G. Gott, INP Greifswald e.V.; J. Chapuis, Areva, Chalon-sur-Saone, France; P. Mendez and G. Dapp, University of Alberta

17H. 10:20 AM Spectral Diagnostics of a Plasma Arc
K. Foster, P. Mendez and R. Sydora, University of Alberta

17I. 10:40 AM A Novel Macro-Micro Pressure Control Technology of Aluminum Alloy Resistance Spot Welding Process Based on Piezoelectric Actuator
S. Chen, N. Wu, J. Xiao and J. Hao, Beijing University of Technology

17J. 11:00 AM Convolutional Neural Network (CNN) Applied in GTAW to Determine Full Penetration
C. Li, Y. Zhang and J. Chen, University of Kentucky

17K. 11:20 AM Torch Path and Attitude Tracking Based on IMU Sensor
R. Yu, University of Kentucky

17L. 11:40 AM High Temperature Full-Field Strain Measurements Based on Digital Image Correlation for GTA W
H. Chen, S. Chen and X. Zhou, Shanghai Jiao Tong University

SESSION 18: MODELING II

Chairs: C. Wu (Shandong University), C. Fisher (Naval Surface Warfare Center Carderock Division)

18A. 8:00 AM Empirical, Analytical, and Computational Modeling of Weld Metal Cooling as a Function of Plate Orientation and Thickness
C. Fisher, M. Sinfield and D. Bechetti, Naval Surface Warfare Center Carderock Division

18B. 8:20 AM Verification and Validation in Computational Weld Mechanics – Uncertainty Analysis of Mechanical Properties
J. Semple, The Ohio State University; D. Bechetti, Naval Surface Warfare Center Carderock Division; Y. Gooroochurn, ESI-North America; Y. Yang, EWI; T. Huang, Hill-Ingalls Shipbuilding

18C. 8:40 AM In-situ Weld Penetration Estimation and Control by a Dynamic Analytic Weld Pool Model Calibrated by 3D Weld Pool Surface Measurement
S. Wu and Y. Zhang, University of Kentucky; H. Gao, Harbin Institute of Technology; W. Zhang, The Ohio State University

18D. 9:00 AM Predict and Control Welding-Induced Distortion on Aluminum Extruded Panels
By Y. Yang, EWI

18E. 9:20 AM High Performance Computing of Welding Residual Stress and Distortion by Explicit FEM
H. Huang, Z. Feng and J. Chen, Oak Ridge National Laboratory; Blair Carlson, GM

18F. 9:40 AM Simplify, Accelerate, and Democratize Welding Process FEA Simulation Modelling with Modern Process Oriented Software
J. Robertson, Simufact Engineering

18G. 10:00 AM FEA DoE on the Effect of Welding Parameters on DMW Overlays
M. Forquer and B. Alexandrov, The Ohio State University

18H. 10:20 AM Effect of Mechanically Assisted Vibrating Wire and Hot-Wire Gas Tungsten Arc Welding (GTAW) on the Geometric Shape for Additive Manufacturing Application
B. Silwal and Ml. Santangelo, Georgia Southern University
18I. 10:40 AM Prediction of Chloride-Induced Stress Corrosion Cracking Behavior in Austenitic Stainless Steel Canisters for Dry Storage of Spent Fuel using a Multiphysics Finite Element Model
X. Wu, Z. Yu and D. Olson, Colorado School of Mines; C. Bryan and E. Schindelholz, Sandia National Laboratories

18J. 11:00 AM High Performance Computing of Welding Thermal-Mechanical Process by a GPU-Based In-House Code
H. Huang, J. Chen and Z. Feng, Oak Ridge National Laboratory

18K. 11:20 AM Study of Medium Influence on the Cooling Conditions of an API 5L X80 Pipe In-service Welding Through the Finite Element Method
A. Alves, D. Batista, R. de A. Cruz Neto and S. Brandi, University of Sao Paulo

SESSION 19: TESTING AND CHARACTERIZATION

Chairs: Z. Yu (Colorado School of Mines), Y. Lim (Oak Ridge National Laboratory)

19A. 8:00 AM A Simple Test for Solidification Cracking Susceptibility and Filler Metal Effectiveness
T. Soysal and S. Kou, University of Wisconsin

19B. 8:20 AM Utilizing Neutron Diffraction to Non-Destructively Map Residual Stresses in Welds
Jeff Bunn, Oak Ridge National Laboratory

19C. 8:40 AM Quantification of Root-Pass Residual Stresses in Pipeline Girth Welds
M. Grams and P. Mendez, University of Alberta

19D. 9:00 AM Effect of Low Heat Input on Creep-Fatigue Strength of 9Cr-1MoV Weldments
T. Payton, H. Whitt, M. Mills and W. Zhang, The Ohio State University; Y. Wang, Oak Ridge National Laboratory

19E. 9:20 AM Fatigue Strength Improvement of Steel Welded Structures Using High Frequency Mechanical Impact (HFMI) Treatment
K. Ghahremani, Walter P. Moore Co.

19F. 9:40 AM Evaluation of Stress Relief Cracking in Grade 11 Welds
C. Sarich and B. Alexandrov, The Ohio State University

19G. 10:00 AM Microstructural Characterization of Base Material and Heat Affected Zones of Serviced and Non-Serviced Coke Drums
S. Romo, J. Oliveira and A. Ramirez, The Ohio State University

19H. 10:20 AM The Prediction of the Steel Response to Welding
R. Bannister and P. Mendez, University of Alberta

19I. 10:40 AM An Evaluation of Wind Tower Submerged Arc Weld Toughness
N. McVicker, Lincoln Electric Company

19J. 11:00 AM Nitrogen Shielding Effects in Duplex Stainless Steel Welding
B. Varbai and K. Majlinger, Budapest University of Technology and Economics; Y. Adonyi and N. Henry, LeTourneau University

AWS POSTER SESSION

NOVEMBER 6-9 - DURING SHOW HOURS

The AWS Poster Session is an integral part of the AWS Professional Program. Graphic displays of technical achievements are presented for close, first-hand examination in the Poster Session. Posters present welding results and related material, which are best communicated visually, as well as research results that call for close study of photomicrographs, tables, systems architecture, or other illustrative materials. Posters are presented in five categories: Students in High School Welding Program, Students in a Two-Year College or Certificate Program, Undergraduate Students, Graduate Students, and Professionals. Be sure to stop by and observe this year’s entries.
EDUCATION SESSIONS

MONDAY, NOVEMBER 6
9:00 AM – 4:30 PM

W33: NATIONAL CENTER FOR WELDING EDUCATION AND TRAINING, WELD-ED
The National Center for Welding Education & Training (Weld-Ed) is pleased to offer a one-day conference for welding educators. The conference is open to secondary, post-secondary, and industry instructors/faculty/trainers. Weld-Ed, partially funded by the National Science Foundation, is a dynamic partnership between industry, community and technical colleges, universities, the American Welding Society, and government with a mission to improve the quality and quantity of welding technicians to meet ongoing workforce needs. The conference agenda includes an overview of Weld-Ed’s six professional development modules, the new accreditation program, and an advanced manufacturing & process showcase where industry partners will share information about the products and services they offer to benefit welding educators.

TUESDAY, NOVEMBER 7
8:30 AM – 4:00 PM

W34: AWS EDUCATION SESSIONS
This annual session, hosted by the AWS Education Committee, features the latest developments and best practices in welding education. Experienced educators and industry experts present tools and conceptual strategies that welding educators can use to help future welders, technicians, engineers, and sales representatives remain competent and competitive.

AWS SOCIETY EVENTS

MONDAY, NOVEMBER 6
7:00 AM – 8:30 AM

W35: AWS PRAYER BREAKFAST
This year’s speaker at the AWS Prayer Breakfast will be Mr. Dave Rider, a leadership consultant. His topic will be “Ultimate Stewardship: Stewarding our Life and Leadership.”

Dave has a leadership coaching practice outside Chicago Illinois. He focuses on intersection of individual leadership and organizational challenges. He leverages strong problem solving analytical abilities with his interpersonal skills allowing him to provide insight and guidance from a unique vantage point. His practice distinctive is a holistic integrated approach, partnering with leaders to improve their personal and professional growth.

Mr. Rider holds a BA, from Michigan State University, and went on to receive his MBA from Lake Forest Graduate School of Management. Dave is a certified professional coach with over 15 years in human resources. Dave has lead corporate talent development, and he is certified to deliver requisite personality and leadership assessment tools.

Dave grew up with sporadic attendance in and around church, but never really understood the Gospel until a trusted friend explained it to him. He became a believer through the ministry of Campus Crusade for Christ at Michigan State University in 1984. He has attended Willow Creek Community Church since 1986. He considers himself to be a pastor to leaders and helps leaders navigate external and internal challenges of leadership. He and his wife Holly have been married for 28 years and have three children.

Attendees will also be treated to guest performer, Patti Nyien, an accomplished pianist and musician. Ms. Nyien, earned a BM in Education (Magnum cum laude) from Belmont University, TN and Piano Pedagogy at University of Michigan. Her Noteworthy Piano Studio recently celebrated its 40th anniversary, receiving Best of Westmont Award 3 times. She directs choir, Forever Praise. Illinois State Music Teachers Association Director and Treasurer, Salt Creek Music Teachers Association past President and newsletter editor, Patti co-chairs and co-conducts Glorious Grands: A Piano Extravaganza!! an 8 Steinway Grand Pianos concert at College of DuPage and Chicago’s Symphony Center, for the Keys to the City Festival. In March 2017, she received the Music Teachers National Association Foundation Fellow Award in Baltimore, Maryland.
AWS SOCIETY EVENTS

9:00 AM – 12:00 PM

AWS OPENING SESSION
During the AWS Opening Session and the 98th Annual Business Meeting, 2017 AWS President John Bray will give the Presidential Report and Dale Flood will be inducted as the AWS President for 2018. Following the induction, the 2017 Class of AWS Counselors and Fellows will also be introduced. This meeting is open to all AWS Members and show registrants.

10:30 AM – 11:30 AM

COMFORT A. ADAMS LECTURE
The Comfort A. Adams lecture this year is titled “Towards Process Based Quality Through Fundamental Understanding of Weld Microstructure Evolution” by Sudarsanam Suresh Babu. Dr. Babu, an AWS Fellow, received his PhD in materials science and metallurgy from the University of Cambridge, UK, in 1992. He worked as a research associate at the Institute for Materials Research, Sendai, Japan, before joining Oakridge Research National Laboratories (ORNL) in 1993 where he held joint researcher positions with the University of Tennessee (UT) and The Pennsylvania State University and served on the R&D staff. From 2005 to 2007, Dr. Babu worked at Edison Welding Institute before joining The Ohio State University staff as a Professor of Materials Science and Engineering and Director of NSF I/UCRC Center for Materials Joining Science for Energy Applications. In 2013, Dr. Babu was appointed UT/ORNL Chair of Advanced Manufacturing at the University of Tennessee in Knoxville.

Dr. Babu’s research relates to welding metallurgy, solid-state joining, ultrasonic additive manufacturing, laser/electron beam-assisted additive manufacturing, phase transformation issues related to low-alloy steels, inclusion formation, nonequilibrium solidification, and application of computational thermodynamics and kinetics to corrosion issues. He is also involved in the application of state-of-the-art characterization tools including atom probe tomography; synchrotron diffraction and neutron diffraction for understanding interaction between weld thermal cycles, phase stability and diffusion in complex alloys, as well as, energy storage materials. He has published more than 186 peer-reviewed papers and numerous conference proceedings.

12:00 PM-2:00 PM

AWS EXCELLENCE IN WELDING AWARDS CEREMONY AND LUNCHEON
The best and brightest stars in the welding industry will be honored for their outstanding industry achievements at the 15th Annual Excellence in Welding Awards. Presented by the AWS and WEMCO, a standing committee of AWS, the Excellence in Welding Awards is the industry’s top honors saluting the year’s most outstanding public initiatives and programs that promote the image of welding. By invitation only.

6:30 PM

AWS OFFICERS/PRESIDENTS/ COUNTERPARTS RECEPTION
AWS Headquarters Hotel, The Hilton Chicago
This reception is held annually during the show and is open to all registrants. Take advantage of this opportunity to meet the AWS Officers, network with members and prospects. A complimentary hors d’oeuvres buffet and open bar are included. Evening business attire, please.

TUESDAY, NOVEMBER 7

12:00 PM – 2:00 PM

W36: AWS AWARDS/AWS FOUNDATION LUNCHEON
As the Society and the industry it serves have grown, so has the need to recognize outstanding scientists, engineers, educators, and researchers. Join an assembly of distinguished award presenters, recipients, and guests for a well-paced ceremony and a delicious lunch. The cost for attending the ceremony is $30 and is open to all registrants. Tickets will also be available at the door.

2:00 PM-3:00 PM

AWS NATIONAL NOMINATING COMMITTEE - OPEN MEETING
AWS Members are requested to submit their recommendations for National Officers to serve during 2019. Nominations must be accompanied by 16 copies of biographical material on each candidate, including a written statement by the candidate as to his/her willingness and ability to serve if nominated and elected.
WELDING

AWS SOCIETY EVENTS

WEDNESDAY, NOVEMBER 8

10:00 AM-10:30 AM
R.D. THOMAS, JR.
INTERNATIONAL LECTURE

Mathias Lundin, CEO of the Swedish welding commission (Svetskommissionen) since 2007 has over 25 years’ experience in the field of welding and allied processes. Lundin holds MSc degrees in Welding Technology and Welding Engineering and has been an International Welding Engineer, IWE, since 1996. He has been active in welding standardization activities since the mid 1990’s and currently serves as Chair of the IIW working group on standardization, WG-STAND (since 2012). He currently serves as vice chair of IIW SC-QUAL (since 2010) and has been Swedish delegate to IIW Commission VI since 2001. Previously, he served as Secretary to both ISO/TC 44/SC 3 and CEN/TC 121/SC 3 on welding consumables. He has attended IIW Annual Assemblies since 1995.

AMERICAN COUNCIL OF IIW

10:30 AM (immediately following the R.D. Thomas, Jr. International Lecture)

American Council of the IIW, meeting of the US member body of the International Institute of Welding.

THURSDAY, NOVEMBER 9

7:00 AM- 6:00 PM
AWS CERTIFICATION EXAM (ADVANCE APPLICATION REQUIRED)

Take your exam to certify as a CWI, CWE, SCWI, CWEng, or test for endorsements.

Call 1-800-443-9353 ext. 273, or go to www.aws.org/certification for details on the certification and registration requirements for each of these programs.

9:00 AM – 12:00 PM - FREE SESSION
AWS CERTIFICATION INFORMATION SESSION: MOVE TO COMPUTER-BASED TESTING (CBT) AND OTHER TOPICS

AWS began offering some of its certification exams at Prometric CBT locations in mid-2016 and plans to continue moving more exams in 2017 to Prometric CBT sites including the portions of the Certified Welding Inspector. AWS Staff along with Prometric staff will provide some short presentations on the transition and will answer any questions. Other certification topics may be covered including recent programs changes and previews of new upcoming certification programs.
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