The conference will feature a combination of tours (including John Deere, Horicon), table top exhibits and technical presentations from a variety of industry leaders. Presentation topics include:

- collaborative robot arc welding
- 3D printing
- automated weld inspection,
- Industry 4.0/IoT
- Robotic offline programming best practices and much more

**BONUS DAY—June 3rd**
Miller Electric will host a tour of their facilities showing the latest in manufacturing automation in combination with state-of-the-art digital IoT power sources and peripheral equipment.

Register for the conference and sponsor/vendor opportunities at https://nrawc2019.eventbrite.com

For more information contact: Sue Silverstein, silverss@matc.edu

Proceeds from this conference fund the John F. Hinrichs Memorial Endowment which provides scholarships to students in welding engineering.

Sponsored by:
AWS D16 Committee on Robotics & Automatic Welding
American Welding Society Milwaukee Section
Milwaukee Area Technical College
7:30 - 8:00 a.m.  Exhibit Viewing at MATC

This is a unique opportunity to see live demonstrations and tabletop displays of cutting-edge products while talking to industry leaders about their technologies and how they may apply in your particular application.

8:00 - 8:15 a.m.  Welcome to MATC and Introductions

8:15 - 8:50 a.m.  A Printer Driver for Welding Applications

*Rick Guptill*, Senior Programmer, AC&E Inc.
*Brett Malone*, Business Development Manager, AC&E Inc.

Learn how to move beyond offline programming and go directly from CAD to a full robot program for welding or cutting. Learn how to complete a robot program with StruCIM to weld building walls in 5 mouse clicks and 4 minutes.

8:50 - 9:25 a.m.  Parametric Programming in an Assembly and Weld System

*Travis Fuhrmann*, Sales Manager, Automation IG

This presentation will focus on recent projects and concepts involving robotic assembly and weld systems using parametric programming to achieve increased flexibility in a simplified format. Key points will include the advantages and challenges encountered along with preparation for a successful implementation.

9:25 - 9:50 a.m.  Networking and Exhibits

9:50 - 10:25 a.m.  Total Weld Quality Management—Turning Big Data into Action

*Jeff Noruk*, President, Servo Robot Corporation

Learn what is involved in using Big Data to manage the inherent variability trying to reduce the productivity of robotic welding systems. Using actionable data to increase the “sweet spot” in the process to improve quality and hit the targeted production rate.

10:25 - 11:00 a.m.  Open-Source Advanced Robotics Developments for Industry

*Matt Robinson*, Program Manager, Southwest Research Institute

There has been a real change relative to the leverage of open-source for making advanced robotics capability more broadly available. ROS-Industrial is an open-source initiative that seeks to take the capabilities of the Robot Operating System (ROS) and extend those capabilities in a robust and reliable fashion to industrial and manufacturing applications. An overview will be provided with focus on manufacturing applications that have been developed and what is coming and the supporting processes within the fabrication value stream.
11:00 - 11:35 a.m.  
**Robotics Displacing Traditional Fabrication Methods and Equipment**

*Steve Saumier, Director of Business Development, SUMIG*

Small to large fabrication companies are looking to improve productivity and quality of their products. Companies are now looking for complete solutions for increasing part throughput using minimal labor.

11:35 a.m. - 12:30 p.m.  
**Lunch and Exhibit Viewing**

12:30 - 1:05 p.m.  
**MIG Challenges: The LSS Solution**

*Ben Woomer, Functional ASE Manager, Genesis Systems*

MIG welding is one of the most widely used robotic joining processes, but it has its challenges and limitations. Minimizing distortion, reducing weight, and controlling consumable costs are some of the objectives manufacturing companies are looking to achieve. The Laser Seam Stepper (LSS) bridges the gap between MIG welding and LASER welding.

1:05 - 1:40 p.m.  
**Automated Welding in the Nuclear Services Business**

*Dave Barton, Principle Welding Engineer, Westinghouse Electric Co., Services Group*

This presentation will focus on the use of welding automation in the PCI subsidiary of Westinghouse Nuclear Services business. This will include the use of robotics in the closure welding of spent fuel canisters, orbital welding, custom weld heads as well as new process developments.

1:40 - 2:00 p.m.  
**Break and Exhibit Viewing**

2:00 - 2:35 p.m.  
**The Digital Revolution in Robotic Arc Welding**

*Chris Anderson, Associate Chief Engineer, Yaskawa Motoman*

We have moved beyond simple amps and volts to power source control loops operating in microseconds, robotic workcells with multiple robots, and most devices utilizing ethernet digital connections. Industry requirements are also placing higher demands on weld quality and productivity driving higher levels of data for arc monitoring and production status. This presentation will cover the varieties of data and how robotic controls are adapting to help manage and optimize modern robotic welding workcells.

2:35 - 3:10 p.m.  
**The Future of Robotic Welding**

*Pete Rogers, Vice President of Operations, Acieta*

Robotic welding systems have evolved over the years and now have the ability to take on more jobs than ever before. Weld cells can be outfitted with robotic positioners and fixtureless setup to automatically load and unload even large, varied and delicate parts, keeping precious operator talents focused on more quality-related jobs.
3:10 - 3:45 p.m.  Robotic Welding in the Rail Transportation Industry  
*John (Tony) Barrett*, Welding Engineer, General Electric  
A look at the specifying and implementing of robotic welding equipment for locomotive components that are extremely large and heavy.

3:45 - 4:00 p.m.  Break and Open Networking

4:00 - 4:35 pm  Application and Implementation of a Collaborative Robot  
*John Martin*, VP Operations, Arc Specialties  
Review of the differences between standard industrial robotic and collaborative implementations. The benefits and limitations of a collaborative welding robot and how to select the right one for your application will be discussed.

4:35 p.m.  Adjourn until evening event at Sheraton Hotel

5:45 p.m.  Cash Bar and Networking at Four Points at Sheraton

6:30 - 7:15 p.m.  Dinner, Four Points Sheraton—Milwaukee

7:15 - 7:30 p.m.  Awards - AWS D16 Committee Excellence in Robotics Award

7:30 - 7:50 p.m.  Talks by students helped by scholarships funded by NRAWC

7:50 – 8:20 p.m.  Keynote Address  
*Christopher Mapes*, Chairman, President and CEO – Lincoln Electric

Mr. Mapes is Chairman, President and Chief Executive Officer and a member of the Company’s executive management team. He was appointed Chairman in December 2013, President and Chief Executive Officer in December 2012 and served as the Chief Operating Office in 2011. He is also on the Lincoln Electric Holdings, Inc. Board, having been elected a Director in 2010 while he was Executive Vice President of A. O. Smith Corporation and President of its Electrical Products unit. Prior to his career at A.O. Smith, Mr. Mapes was President, Motor Sales and Marketing of Regal Beloit Corporation and also served as President of the Global OEM Business Group of Superior Essex, Inc. Mr. Mapes is a graduate of Ball State University (BS 1981), University of Toledo (JD 1988) and Kellogg School of Management, Northwestern University (MBA 1998).
7:00 - 7:30 a.m.  Light, healthy breakfast at MATC

7:30 a.m. - 2:00 p.m.  Tour of John Deere, Horicon Works
   Bus to Horicon, Tour, Lunch, Bus back to MATC

The conference attendees will be broken into two groups. One group will go to building 1 and the other
will go to building 2. Transportation and lunch is included.

2:00 - 2:30 p.m.  Additive Manufacturing
   Mark Douglass, Senior Business Development Analyst, Lincoln Electric

This presentation will cover the unique requirements associated with additive manufacturing including
how to pick a good application with respect to manufacturability and cost savings.

2:30 - 3:00 p.m.  Today’s Workforce in Welding
   Joe Young, Senior Manager Workforce Development, AWS

This presentation will provide insight to the shortage of welding personnel across the country, and
current initiatives the American Welding Society has engaged in to combat the issue. Topics to be
covered include; current workforce data, AWS scholarship & grants programs, and a review of recent
collaborative workforce efforts.

3:00 - 3:30 p.m.  Integration, Launch & Yield of a Low-Cost Flexible Solution
   in an Automation Value Stream
   Caleb Cordova, Welding Engineer, Helgesen

This presentation will address adding a second robot cell to an existing value stream. The process has
shown an excellent return on investment, increased manufacturing velocity, improved overall quality,
and reduced need for highly skilled labor in the value stream. Critical factors for success include a
thorough understanding of the production process variability, and adherence to best practices.

3:30 - 4:00 p.m.  Tesla Case History Manufacturing Seat Frames
   Vern Mangold, Principal Investigator, KaySafety

This presentation provides a case study in the process of debugging robot welding performance
problems associated with an electric sports car’s seat frames with a focus on process, design and
metallurgical issues.
Robotic Welding Conference History

Celebrating the conference’s 36th year!

The conference was started in 1983 by John Hinrichs of AO Smith Corporation through a partnership with the University of Wisconsin-Milwaukee and its Continuing Education Program. This year marks the 36th anniversary of the conference. The mission of the conference was to present new and emerging technology in the areas of welding and automation. The conference was unique in that it did not have a call for papers but instead was an invited list based on what technologies were viewed as being cutting edge at the time. The conference prospered for many years in downtown Milwaukee but in 1992 the attendance was starting to decline (can you spell Milwaukee in February?) and the decision was made to move to Florida.

This change in venue to Orlando was done in conjunction with the American Welding Society (AWS) and with the addition of Paul Ramsey (former AO Smith Welding Research Manager and AWS President) as Co-Chairman. The next few years the emphasis was placed even more on introducing very new technologies as evidenced by the first presentation in North America about Friction Stir Welding at the 1994 conference. In 1997 a partnership was formed with the AWS D16 Committee on Robotic and Automatic Arc Welding to assist in the running of the conference and highlighting the work being done by this group in the areas of standards. The name of the event was changed to the AWS National Robotic Arc Welding Conference and Exhibition.

In 1999 Jeffrey Noruk, D16 Chairman, joined John and Paul as a co-chair and continued to strengthen the relationship with the D16 committee via the presentation of educational material associated with standards on Safety, Do’s & Don’ts, Qualification & Certification of Personnel, and Robotic Equipment Interfacing.

In 2005 we came full circle with the conference moving back to Milwaukee, but this time in conjunction with the local AWS Milwaukee Section and the Milwaukee Area Technical College. This conference has been held every other year (the “odd years”), and is modeled after the highly successful Detroit Sheet Metal Conference which is held in “even years”.

In 2012 our colleague, mentor, and friend John F. Hinrichs, passed away. The proceeds from the 2005-2015 conferences started the John F. Hinrichs Memorial Endowment through the AWS Foundation, which is currently funded to almost $400,000.

Profits from this year’s conference will go towards the John F Hinrichs Memorial Endowment. In 2018 over $18,000 in scholarships was awarded to students in Welding Engineering/Welding Technology.