ROBOTIC ARC WELDING
February 9-10, 2004 • Orlando, Florida
Grosvenor Resort • Walt Disney World
2-Day Conference & Exhibition

PLUS 2 Day CRAW Seminar, Feb. 11-12 • Exam Feb. 13

Endorsed by American Welding Society
A 2-day conference and exhibition designed to help you decide if robotics is a good match for your application. If you’ve already integrated robotics, learn how to extract more precision from your operation.

Register Today!

February 9-10, 2004
Walt Disney World’s Grosvenor Resort

Plus 2 Day CRAW Seminar Feb. 11-12 & Exam Feb. 13

Conference or seminar attendees can take advantage of the specially negotiated rate of $99 for single and double occupancy. This special rate is also extended to you three days before the conference and three days after the conference (depending on hotel availability). Be sure to mention the AWS 8th Robotic Arc Welding Conference and Exhibition or the Robotic Arc Welding Seminar to receive this rate. The cutoff date for the $99 rate is January 6, 2004. Space available rates can apply after this date. Reservation must be guaranteed with a first night's deposit along with other conditions. Of course, hotel and travel costs are not included in the conference or seminar fees. Complimentary Disney Park buses are available to and from all Disney Theme Parks. Overnight guests enjoy free parking.

Special Features

- CD-ROM take-homes: One contains the presentations, participants, and exhibitor contacts; the second is a video showing successful robotic applications.
- TUTORIALS. Review the basic terms and concepts of RAW and a refresher for those with current robotic operations who might not know it all.
- 16 Experts ready to spend off-line time with attendees.
- Case Studies revealing the cross-industry fundamentals of robotics: steel, aluminum, filler materials, power sources, fixturing, controls, monitoring, and true weld costs.

To preview the resort and its amenities, go to www.grosvenorresort.com

1850 Hotel Plaza Blvd. • Lake Buena Vista, Florida 32830-2202
(800) 624-4109;(407) 828-4444; Fax: (407) 827-6314.
Note: Registrant Information needed for each registrant

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Your Technical Interests

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MAIL OR FAX THIS FORM

BY PHONE: 1-800-443-9353, Ext. 223 - 8 a.m.-5 p.m., EST.
BY FAX: 305-648-1655 - FAX this Registration Form 24-hours a day
BY INTERNET: www.aws.org/robotics - Secure Online Information and Registration 24-hours a day
BY MAIL: MAIL this Registration Form to: American Welding Society P.O. Box 440367 Miami, FL 33144-0367

Dues include $28.30 for Welding Journal subscription and $4.00 for the AWS Foundation.

The non-member seminar fee includes a two-year membership; the certification fee includes a three-year membership.

Please note that your AWS Membership will be active after completion of event.

SPECIAL CONSIDERATIONS: In accordance with the Americans with Disabilities Act (ADA), AWS strives to accommodate all participants with special needs. If you require assistance, or need further information please inform the AWS Conference Department, 800-443-9353, ext. 449, well in advance of the date of the event.

REFUND POLICY: AWS reserves the right to cancel any event in its reasonable discretion. In the event of cancellation by AWS, registration fees will be refunded in full. AWS shall have no further liability.

Registered Seminars

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TOTAL |

Remit Payment To: American Welding Society P.O. Box 440367 Miami, FL 33144-0367

AWS USE ONLY

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Program Schedule

Sunday, February 8
3:00 – 6:00 p.m. Advanced onsite registration

Monday, February 9
7:00 a.m. – 4:15 p.m. General Registration
7:00 a.m. – 8:30 a.m. Exhibits open
8:30 a.m. – Welcome and Introductions from Cochairs
Jeffrey S. Noruk, President, Servo Robot Corp, Mequon, WI
John F. Hinrichs, CEO, Friction Stir Link, Inc., Menomonee Falls, WI
Paul W. Ramsey, Consultant, Ramsey & Associates, Milwaukee, WI

8:40 a.m. – 12:00 p.m. Session I
1. The Intelligent Arc Welder
   The "intelligent arc welder" can: make programming and operation easy; increase throughput with advanced software and control; include uptime tools to maximize robot utilization; reduce the cost of handling and material management; and acquire usable data for more precision.
   Michael M. Sharpe, Engineering Manager, Materials Joining Segment, FANUC Robotics, Rochester Hills, MI

2. A Total Quality Plan for Robotic Arc Welding
   Successful robotic arc welding requires a well thought out plan for success, which needs to be in place early in the project. Productivity, uptime and weld quality do not come free and, of course, “the devil is in the detail.”
   Jeffrey S. Noruk, President, Servo Robot Corp., Mequon WI and Chair, AWS D16 Robotic and Automatic Welding Committee and AWS/SAE D8C Subcommittee on Arc Welding

3. AWS D16 Committee Publications and a New Video Highlighting Successful Robotic Welding Applications
   The D16 Committee is the information resource for those engaged in the safe use of robots in arc welding applications. Learn the rationale behind recent ANSI-compliant work performed by the Committee in promulgating the Specification for Robotic Arc Welding Safety. Special preview of the new AWS video on robotic applications.
   Vernon L. Mangold, Jr., President, ISS, Centerville, OH, and Michael W. Perry, Sales Manager, Robotic Products, Preston-Eastin, Inc., Tulsa, OK

4. Do's and Don'ts of Fixturing for Robotic Arc Welding
   Fixturing can make or break a robotic welding application. Properly designed fixtures can help assure success, but can also enhance productivity and quality. The focus is on design and application of welding fixtures to optimize the robotic welding installation.
   James Berge, Owner, Berge Enterprises, St. Charles, IL

12:00 p.m. - 1:00 p.m. Lunch and Lecture

“Welding in the 24th Century”
Guest Speaker E. D. (Ernest) Levert, Senior Staff Manufacturing Engineer, Lockheed Martin Missiles and Fire Control, Dallas, TX, and AWS President 2002-2003. Like Star Trek, this presentation envisions the future – in this case, the future of professional welding.
1:00 p.m. - 3:30 p.m.  Session II

5. Robotic Arc Welding Applications in Shipbuilding
Automation will allow shipbuilders of today to enter the worldwide shipbuilding market of tomorrow. Integration of automation into existing shipbuilding technology requires patience, commitment and up-front cost but ultimately will provide shipbuilders with a significant competitive advantage.

Uma Bansal, Electrical Engineer, NAVSEA, Carderock Div., West Bethesda, MD

6. Automation of Welding for ATV Frames
Here’s the history of a project that includes the evolution of both the process and the parts. Details on cost/benefit and labor savings and other real application information will be included. The details of this nearly two million dollar project are both intriguing and relevant.

Robin L. Foster, Technical Welding Manager, Arctic Cat, Inc., Thief River Falls, MN

Refreshment Break in Exhibit Hall

7. High Volume Welding of Thin Gage Stainless Steel
Fabricating a combination of stainless steel sheet and cast components on a high volume scale has been achieved using GMAW. This robotic welded assembly problem revealed opportunities for other improvements including leak rate and dimensional capabilities.

Christopher P. Schils, Senior Manufacturing Engineer, Modine Manufacturing Company, Joplin, MO

3:30 – 7:30 p.m. Exhibit Hall open

5:30 p.m. - 6:30 p.m. Hosted Reception in Exhibit Hall; cash bar until 7:30 p.m.

Tuesday, February 10

8:30 A.M. - 12:00 p.m.  Session III

8. Case Studies: Utilizing Arc Data Monitoring
This presentation will discuss the results derived from case studies where arc data monitoring equipment was profitably used.

Vincent N. Romano, Sales Manager, Impact Engineering, Jackson, MI

9. What to do When Your System Just Doesn't Weld Right: A Diagnostic Approach
How should you evaluate arc data, robot-to-welder interface, and weld feed systems? A simple diagnostics approach from the welding equipment perspective is offered.

Kevin L. Summers, Welding Engineer, and Bob Davidson, Electrical Engineer, Miller Electric Mfg. Co., Appleton, WI

Refreshment Break in Exhibit Hall

This presentation describes functional and technical details of the CAN-based protocol being studied and documented by the AWS A9 Committee. This network technology is replacing point-to-point electronic links to connect power sources, wire feeders, gas controllers, and other devices for hard automation and robotic arc welding, and will make integration of weld cell devices more efficient and effective.

William Rippey, Electrical Engineer, NIST, Gaithersburg, MD, and Chair, AWS A9 Committee on Computerization of Welding Information

11. Why Understanding Welding Costs is the Key to Cost Reduction
An understanding of how to define and measure the cost of welding can lead to a substantial reduction in that cost. The impact of parameter and materials changes on welding productivity/cost will be illustrated using several simple software tools.

Kevin A. Lyttle, Manager, Welding R&D, Praxair, Inc., Tonawanda, NY

12. A New State of the Art Flexible Fabrication Line
The automation of a sheet metal processing cell to increase capacity and productivity, while decreasing work-in-process, workman’s compensation costs, cycle time and quality defects. This fabrication line includes a cut-to-length line, turret, laser, wing bender, robotic welding and sophisticated material handling equipment.

James A. Grace, Engineering Manager, P.E., ABB Power T&D Co. Inc., Jefferson City, MO
12:00 p.m. - 1:00 p.m. Lunch and Introduction to 
New AWS Robotic Arc Welding Certification
Ed Bohnart, SCWI, CWE, CRAW-Technologist, 
CEO, Welding Training Solutions, and AWS 
President 1995-1996

1:00 P.M. - 3:30 P.M. Session IV

13. Case Studies: Success for First Time 
Welding Robot Users
Two case studies of companies that purchased 
robots for the first time will have their 
experiences compared.

David J. Erbe, Application Manager, and Marty 
Weir, National Sales Manager, Panasonic 
Factory Automation, Geneva, IL

14. Case Studies: Laser Welding of Steel and 
Aluminum
Why does North America continue to research 
and apply laser welding for automotive 
manufacturing? Laser welding of automotive 
roofs in steel and laser welding of aluminum 
avtomotive structural components give the 
answers.

Douglas Juhl, Product Manager, Laser 
Systems, KUKA Flexible Production Systems, 
Clinton Township, MI

15. Case Studies: Robotic Arc Welding with 
Metal-Cored Filler Materials
The speaker examines the features and 
benefits of metal-cored filler materials in 
robotic arc welding. Using laboratory- 
generated data and actual case studies, the 
benefits of welding mild steel, thin gage base 
materials with small diameter metal-cored wires 
will be presented.

Dan Arthur, Vice President of Research and 
Development, J.W. Harris Co., Mason, OH

16. A Simple Effective Approach to the 
Implementation of Global Robot MIG Weld 
Process Controls
Insider tips on how to recognize the root cause 
of robot weld issues and how to implement 
effective robot weld process controls in order to 
optimize productivity.

Edward Craig, CEO, www.WeldReality.com, 
Ashville, NC

3:30 p.m. Conference Adjourns

EXHIBITOR INFORMATION

Fee includes: 8’ deep by 10’ wide tabletop exhibit 
with one draped 6’ table, one chair, an identification 
sign, and one full conference registration. 
Networking and contacts are facilitated by all breaks and 
the reception being staged in the Exhibit Hall. Exhibit space is available on a first come, first 
served basis. Exhibit setup will be Sunday, February 8th from 3:00 p.m. to 6:00 p.m. Call 
now and reserve your space by dialing (800) 443-9353, ext. 223.

Books mentioned and all other AWS technical publications including standards can be 
ordered through Global Engineering Documents at (800) 854-7179 (U.S. and Canada) or 
on-line at www.global.ihs.com

Coming Soon...Don’t Miss
Automatic Welding Conference at the AWS 2004 Welding Show
Chicago, April 7-8

The time has come to reduce your welding costs. Automatic welding is the way to do it. 
Engineers have been discussing automatic welding for decades, but many of these 
discussions have not really hit the bull’s-eye - cost effectiveness. More than ever, industry 
must pay more attention to automatic welding. If a company is not using it, why not? And, if 
a company is using it, then what can be done to improve the process? How can the quality 
of the weldment be improved? As the quality is improved, the cost will be driven down. This 
conference will examine the improvements to conventional automatic welding processes, 
and talks will be presented on some of the newer methods such as laser welding, friction stir 
welding, magnetic forge welding, and hybrid welding. You will also hear about monitors, 
vision systems, joint tracking systems, robotics, and laser cameras.

For more information please contact the AWS Conference Department 
1-800-443-9353 ext. 312
The AWS Certification Program for Robotic Arc Welding – Technicians and Operators Examination, February 13, 2004

This new AWS credential signifies that the robotic arc welding operator or technician has demonstrated the capability of working safely and effectively in the arc welding cell. Because proof of active practice or re-examination is required every three years, certification also signifies that the operator or technician is current with the welding industry’s standards.

AWS is offering a two-day training seminar to cover the central requirements that will be tested if the participant wishes to proceed onto credentialing. Professionals needing a broad overview to automation and robotics issues should also attend.

The topics that will be covered in this seminar include the following:

Fees and Materials
• Weld equipment setup
• GMAW plus other gas-shielded processes
• Weld examination
• Terms and definitions
• Symbols – welding and robotics
• Safety
• Destructive testing
• Conversion and calculations
• Robot programming
• Welding procedures
• Programming logic

Seminar fees include tuition, lunch daily, refreshment breaks, and two-year membership in AWS for nonmember registrants. In addition, seminar attendees will receive:
• D16.4:1999, Specification for Qualification of Robotic Arc Welding Personnel
• QC19:2002, Standard for AWS Certification of Robotic Arc Welding Operators and Technicians
• ARE-11 Mechanized, Automated and Robotic Welding
• ARE-10 Monitoring and Control of Welding and Joining Processes

Examination information
The exam is comprised of both a multiple-choice test consisting of 136 questions (Part 1), and a performance test that covers the practical demonstration of knowledge and ability involving a robotic system (Part 2). A passing mark of 75% is required on Part I in order to meet the minimum requirements for certification as CRAW Operator or Technician.

Please contact the AWS Certification Department (1-800-443-9353 ext. 273) or go to http://www.aws.org/certification/CRAW/ for information on the requirements necessary to qualify for the two-part exam.

About the instructor
Ed Bohnart (SCWI, CWE, CRAW-Technologist) is the principal of Welding Education and Consulting with offices in Florida and Wisconsin. He launched his consulting practice after a successful career with Miller Electric Mfg. Co. where he directed their training operations. He is an AWS Past President and Distinguished Member. For six years, Bohnart was the Chair of the AWS C5 Committee on Arc Welding and Cutting Processes and remains active on the committee as an Advisor.

Additional Seminar and Exam Sites:

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<th>Location</th>
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