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SAVE THE DATE - AT A GLANCE -

| March 5-7: | WEMCO Annual Meeting |
|-------------|------------------------------|
| March 10: | Career & Hiring Fair |
| April 12: | Ladies Night |
| May 4-5: | CWI Seminar |
| May 10: | CWI Exam |
| June 13: | Sporting Clays Fundraiser |
| Sept. 8-11: | FABTECH 2025 Chicago |
| Sept. 25: | Annual Golf Outing |

Check out the latest videos published by the American Welding Society on its YouTube page.

AWS Technical Nights are open to everyone! We encourage that members bring students and non-members to learn more about our organization and industry.



AWS-Detroit Technical Meeting PATRONS NIGHT Thursday, March 13, 2025 • 5:30 to-8:00pm AHB Tooling & Machinery 15300 Martin Rd., Roseville, MI 48066

To RSVP, please visit: www.eventsquid.com/event/27609







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Please join us on Thursday, March 13, 2025, at 5:30 pm, for another AWS Technical Meeting hosted by AHB Tooling & Machinery, Roseville, Michigan. The March 13th meeting, in collaboration with Weld Systems Integrators (WSI), will feature a presentation on Diffusion Welding, sometimes referred to as diffusion bonding, by Filippo Cortiglioni, Area Sales Manager USA/INDIA at TECNA. This presentation will cover the diffusion bonding process that creates a permanent bond between metal surfaces without melting by applying force and heat for an extended period. The diffusion welding process is ideal for bonding large-scale buss bars used in EV automotive, EV truck, train locomotive, power generation, and renewable energy applications.

In addition to the Diffusion Welding presentation, AHB, Weld Systems Integrators, and TECNA will showcase several innovative new products. This includes a Yaskawa Motoman Robotics America robot using a TECNA 160 kVA MFDC heavy-duty weld gun (the first single transformer spot gun for Aluminum), the TECNA 3680Si portable industrial welding station with SMART WELD function, where the machine automatically recognizes thickness and material, and a first look at the TECNA SENSUM – 6158NX / 486, a 200 kVA MFDC press-type spot welder. SENSUM is a groundbreaking welding technology, allowing a complete weld cycle control plotting function integrated directly into the inverter, giving users unmatched precision and full, real-time feedback both onsite and remotely.

eBulletin Contributors

(Emails linked where available.)

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Chairman's Message *Russ Webster*

Hello AWS - Detroit Members and Friends,

February is nearly behind us and it's been a great 2025 so far for AWS Detroit. I want to start by thanking Ram Solutions and Staubli for hosting what I'm sure will be an excellent event with a focus on robotic tool changers and other automation applications in the welding industry. That event will be a great opportunity to network with your fellow welding professionals while interacting with the latest in automation technology.

AWS Detroit has some great opportunities available for members to develop themselves professionally in the coming months. AWS Detroit will be hosting the AWS CWI Seminar on May 4th-9th, if you missed the February 17th deadline to apply for a free seat in that seminar, another opportunity will come in the fall, keep an eye on your e-mail!

We also are accepting nominations for people interested in serving on the AWS Detroit Executive committee. If you've ever wondered what it's like to run this section and would like to try participating, please let us know by reaching out to myself at **russ.webster@gm.com**. People who are elected to participate will meet with the e-board once a month in person to network and update the team on their activities. Deadline for nominations is fast approaching so reach out ASAP.

Finally, we still have a career fair coming up in March. Monday March 10th, from 6 to 8pm at Harrison Hall at the Hawk, there will be a skilled trades career fair, please stop by if you're looking for a job or career change.



of the Patron's Fund Donations are directed to scholarships for students who are pursuing careers in Welding Engineering and Welding Technology.

To become a Patron, contact Steve Gucciardo AWS Detroit Section-Patron's Committee Chair, 810-623-6508 or email gucciardos@shapecorp.com

Patrons 2024-25

ARO Welding Technologies, Inc. CenterLine (Windsor) Ltd. **Changer & Dresser Corp.** Don Decorte - DTS Technical Services Elizabeth Lekarczyk Forrest Lissner Fronius USA, LLC **FUSION Welding Solutions Jack and Sons Welding and Fabricating** LeTourneau University Welding Engineering Alumni Lube Power, Inc. Luvata Matuschek Welding Products, Inc. Milco Manufacturing, Inc. **Obara Corp. USA** Ram Solutions, Inc. **RoMan Manufacturing SDK Engineering Stephen Gucciardo** The Ohio State University Welding Engineering Alumni United Technical Inc. **Employees of United Technical, Inc. United Technical Solutions** Vector NDT Welform Electrodes, Inc. WSI, Weld Systems Integrators, Inc.



Ask the Welding Engineer

By Donald F. Maatz, Jr.

• "What options exist for evaluating the quality of a weld nut, other than push-off, and how viable are they?"

"Our previous columns (ATWE Nov-• 24 thru Jan-25) started a broad look at projection welding (PW). As stated in these earlier submissions, while the initial question related to the important topic of PW quality, it will take us some time to get there as, from my perspective, we need to establish a few important things about the PW process. To date we have touched on a few of the challenges. These would include the varied material coatings, gauges and substrate strengths one is asked to weld on, plus the unique nut designs the welding industry must deal with. Keeping the aforementioned in mind, it is time to further our discussion of how to address the actual welding of these forged/coined fasteners. And to do that, we need to talk about the unique nature of a PW weld schedule, and the equipment needed to make it happen.

Our initial discussion of a PW schedule in our previous column (ATWE Jan-25) described the lack of an available industry consensus, specifically, the absence of a standardized welding schedule similar to what is available from the resistance spot welding side of the industry. There are several reasons for this. Key among them is the fact that available data is typically based on a particular fastener being welded to a specific base material.

The issue with part-specific data is that it is not readily accessible to the resistance welding community. As a result, individuals on the plant floor attempting to weld a forged projection fastener do not have the benefit of the good 'starting point' that is often afforded by spot welding schedules. This lack of an established set of weld schedule guidelines targeting forged or coined projection fasteners forces the tooling designers to either make educated guesses as to the welding schedule parameters required to weld a particular fastener and sheetmetal combination, or to incur the additional time and expense of developing a unique welding lobe curve. The end result is the tooling design may or may not be capable of making a quality, repeatable projection weld.

The primary reason for the difficulty in finding a solution to the lack of a standard-

ized projection welding schedule is the large number of variables that must be accounted for. In addition to the items discussed to date, the variables associated with the fastener also must be considered included. These in-

must be considered included. These include the material and projection volume, geometry and number. As an example of this complexity, I only needed to open my desk drawer to find several different types of weld nuts. My guess is that many other folks in the resistance welding community have a similar collection (see Figure-1). All of the above-mentioned items are known within the resistance welding community; however, a solution to this issue has so far been elusive and I will not attempt to offer one here.

That all being said, the following guidelines should help with the selection of a forged fastener projection welding schedule and any subsequent tooling component sizing that you may need to perform.

- The required welding time will be shorter than you think: While it is necessary for the required weld time in a spot weld to increase as a result of an increase in material gauge, the same relationship does not necessarily hold true with the projection welding of forged fasteners. For applications from M6 thru M12, with three properly sized projections, any weld time in excess of 80-140 ms should be viewed with suspicion. Those fasteners designed with significantly larger projections for much thicker substrates will require more weld time but these are very application specific.*
- The required weld force will be higher than you think: The high weld force associated with projection welding is required for a few reasons. These include the proper contact of the projections to the substrate prior to the initiation of current flow (crucial, especially if welding



anything other than a three projection design) and the necessary forging pressure once the current has stopped. Those machines that have poor follow-up may require even more weld force to achieve a successful weld. The idea of the need for higher force values makes even more sense when you realize that the force applied must pass through each projection and an increase in their number drops the pressure that each one feels.

 The required weld current will be much higher than you think: This is one area where you can encounter real issues. It is usually not too hard to turn down the weld time, and it may be a bit harder to find additional weld force, but tell someone their expensive and long-lead time transformer and/or weld control is not sized properly and stand by for some very long faces. The reasons can be many; the primary bus does not have the capacity to support the turns-ratio of their secondary circuit, the inverter does not provide enough primary capacity for their MFDC transformer, the list goes on. To add insult to injury, when folks make a mistake in this area, it is often a large one. We have seen applications where testing revealed an excellent projection weld could be obtained with 40 kA and their tooling was capable of only 20 kA. A difference this large often does not leave open the door to any kind of weld schedule compromise.

Despite the challenges mentioned above, the projection welding of forged or coined fasteners can be a very robust and capable process, if the basic rules are known and *Continued on page 4*

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Ask The Welding Engineer continued page 3

followed. That being said, due caution must be exercised, especially in the initial development of a new process, to ensure that capable equipment is procured lest you find yourself in a situation where you are forced into trying to achieve a weld under less than optimal conditions.

So in a nutshell what we have to work with has not changed: Weld nuts that are varied in their design and application. I very much welcome any additional thoughts and ideas on this important topic."

*As the market has clearly spoken with regard to AC vs. MFDC for the welding of forged/coined projection fasteners (think near 100% MFDC), we have decided to use just milliseconds (ms) for our weld time. Figure it is time I got on board. Have I ever mentioned when I started in the business, I used AC weld controls with ignitron tubes? Perhaps more than once, but I digress...

REFERENCES:

- 1) Resistance Welding Manual, revised 4th Edition
- 2) AWS C1.1M/C1.1:2019, Recommended Practices for Resistance Welding

If you have more questions about this topic, contact:

DON MAATZ R&E Automated Systems 70701 Powell Road Bruce Township, MI 48065 (586) 228-1900 – Office **dmaatz@reautomated.com**

Donald F. Maatz, Jr. is with R&E Automated Systems. He is past-chairman of the AWS-Detroit Section, serves on the D8 and D8.9 Automotive Welding Committees, is chair of the D8D, and an advisor to the C1 Resistance Welding Committee, is an AWS endorsed CWI and an instructor for the RWMA School. He is a graduate of Ohio State with a BS in Welding Engineering.

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> Questions? Contact: Ryan Cooper, Great Lakes Regional Sales Manager Phone: 248-828-5048 | Email: Ryan_Cooper@lincolnelectric.com

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- Institutional Grants (endowment based);
- Scholarships through Application (endowment based);
- Scholarships through aptitude (HSWC);
- Vocational Support (case by case but budgeted each year), Institution (e.g. supply gas and materials), Local Contest (e.g. travel expense), International Contest (e.g. travel expense);
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American Welding Society -**Detroit Section** Seminar Information

DATES

CWI Seminar: May 4 - May 9, 2025

Exam: May 10, 2025

LOCATION

Detroit Metro Airport Marriott 30559 Flynn Dr Romulus, MI 48174



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2025 Excellence in Welding Awards Campaign is Underway!

To nominate yourself or someone you know, CLICK HERE.

2024's recipient in the Individual category is featured as a speaker at this year's WEMCO Annual Meeting in Fort Myers (March 5-7).

Registration for the WEMCO Annual Meeting remains open through this month, so if you've had it with Winter and need an escape then consider heading South for a few days to take-in a dynamic program and mingle with the leaders of our industry!

At this year's FABTECH show in Chicago, recipients and their nominators from 2025 and years past will be invited to attend a special event to occur on stage at the FABTECH Theater! More news on that will be viewable in the coming weeks.

For now, please consider a nomination for a person or organization in one of 9 categories. If you have an existing nomination but would like to add-on to what's already stored, please feel free to simply edit that nomination unless you wish to begin the process anew.

WEMCO and the AWS Foundation are excited about returning to FABTECH Chicago! If you're reading this then we hope to see you there!

For assistance, please contact Adrian Bustillo, WEMCO Committee Secretary: P: 786-937-9595 | E: abustillo@aws.org

The annual Excellence in Welding Awards, created by WEMCO, honor individuals and organizations that elevate the image of welding and bolster the industry. Celebrating dedication to

enhancing welding's reputation within communities, the awards span nine categories:

- Individual
- Educator
 - Educational Facility
 - Small Business

AWS Section

- Media
 - Veterans

• Distributor

Large Business

Nominees are put forward by industry peers, with winners chosen by the Excellence in Welding Committee. Awardees are celebrated during the Excellence in Welding Awards Ceremony at FABTECH. Nominations are open until June 28th, so act swiftly to ensure your deserving candidates are considered. Don't miss this opportunity to shine a spotlight on those who make a difference! **CLICK HERE** for the Award Nomination Portal.

American Welding Society Annual Golf Outing



September 25th, 2025

18 Hole 4 Person Scramble Format Kurt VanDonkelaar—kvandonkelaar@romanmfg.com

American Welding Society **DETROIT - SECTION 011**



Open Range—7:30am Registration—8:00am Shotgun Start—9:00am









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2025 Ladies Night Scholarship Gala

WHERE: The Westin Southfield Detroit (Atrium) - WHEN: Saturday, April 12th, 2025 - SAVE THE DATE



For more information, contact awsdetregistration@awsdetroit.org

Cocktails Dinner and Program Afterglow Dancing 6:00 pm - 7:00 pm 7:00 pm - 9:30 pm 9:30 - 12:00 am

For overnight reservations call 248.827.4000 or click here to book online

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