



American Welding Society®  
DETROIT SECTION



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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.*



### Chairman's Message *John Pippin*

#### **Hello AWS family and friends,**

Welcome back from the holidays! I hope you had a chance to spend time with family and friends! I personally had a good Christmas with my family and our newest member my granddaughter 6-month-old "Penelope" what a great time.

Hope we are all recharged and ready for this new year as we have several events come up and one of the big ones is Ladies' Night 2024 host by Russel Webster Ladies' Night chairperson. Ladies Night will be April 13, 2024 at The Atheneum Hotel in Detroit. Make your reservations today by clicking on the link below for this great event.

We also have a full schedule of technical meetings coming up, so you'll want to be watching future e-Bulletins and checking our website often for the latest information on those. As always, you can find more information about our local events, both past and upcoming at [awssection.com/detroit/](http://awssection.com/detroit/). Please visit our site often as it is always being updated with new content. Thank you greatly for the many ways you support our AWS-Detroit Section and the industry we serve.

Thanks,



*John Pippin*



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

## 2024 Ladies Night Scholarship Gala Detroit Section

WHERE: The Antheneum <sup>\*NEW VENUE\*</sup>

WHEN: Saturday, April 13th, 2024 <sup>\*SAVE THE DATE\*</sup>

For more information, contact [awsdetregistration@awsdetroit.org](mailto:awsdetregistration@awsdetroit.org)  
For overnight reservations call (313) 962-2323 Or online: [www.atheneumsuites.com/](http://www.atheneumsuites.com/)

# Patrons 2023-24

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## Patron's Fund Donations

Thank you for your support! ONE HUNDRED PERCENT 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](mailto:gucciardos@shapecorp.com)

## Coming Events

January Technical Meeting  
Cancelled

February Technical Meeting  
Gestamp

March Technical Meeting  
Ram Solutions

2024 Ladies' Night  
April 13, 2024

May Technical Meeting  
TBD

CWI Seminar: May 5 - 10, 2024  
Exam: May 11, 2024  
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# Ask the Welding Engineer

By Donald F. Maatz, Jr.

**Q:** “Do you know of a strategy one can use in an attempt to reduce resistance spot welding expulsion? We have been fighting this issue for a while, with varying degrees of success, and are looking for some fresh ideas. Our shop utilizes predominantly robot mounted welding guns, but have some fixture tools as well.”

**A:** “In our previous column (ATWE Dec-23) we initiated a discussion on expulsion as it pertains to the Resistance Spot Welding (RSW) process. We provided a few definitions, and a possible outline towards expulsion reduction/elimination. The first step on that journey was the circumstances occurring to create expulsion.

However, I think to better understand some of the reasons why expulsion occurs, it might be beneficial to understand some (but by no means all) of what is happening when we make an acceptable spot weld. You know, something without any drama or excitement. Maybe it is better to say without *visible* drama or excitement, as actually, there is a whole lot going on.

The following is by no means the whole story on what happens when a spot weld is made, but will work for our purposes. That being said, it should not be too difficult to conjure up the following mental picture.

- 1) We must start with the premise the condition we are tasked with joining together by means of RSW is, in fact, weldable in a robust fashion.
- 2) We then visualize we have the proper equipment; it is working as designed, and correctly maintained.
- 3) We must have parts presented to the welder in an acceptable condition, and all of their surfaces to be welded are normal to the electrodes.
- 4) We then initiate the correct weld schedule, and the tooling brings the electrodes together with the desired force on the parts to be welded.

Pro Tip: If all of the aforementioned is true, and the system can be maintained, then one is well on their way down the path of expulsion reduction/elimination. That being said, now it is time to borrow Carl Sagan’s *Ship of the Imagination* and take a deeper look at what is actually happening, especially to the material being welded around, and between, the electrodes\*.

The first thing one will notice as part of our deeper dive is the act of bringing the electrodes together under load causes some small degree of plastic deformation to the materials being welded. And this is before the application of any secondary welding current.

As shown in Figure-1\*\*, the surface of a material is not exactly smooth. Even if it appears to have a polished finish, the actual surface, at a microscopic level, is rather rough. The irregular projections present, called asperities, are what is actually touching when we bring things together. The forces exerted by the electrodes are compressive in nature, leading the asperities to plastically deform, and increasing the contact area between the two surfaces. This deformation also has the effect

**ASK THE WELDING ENGINEER**  
continued on page 5

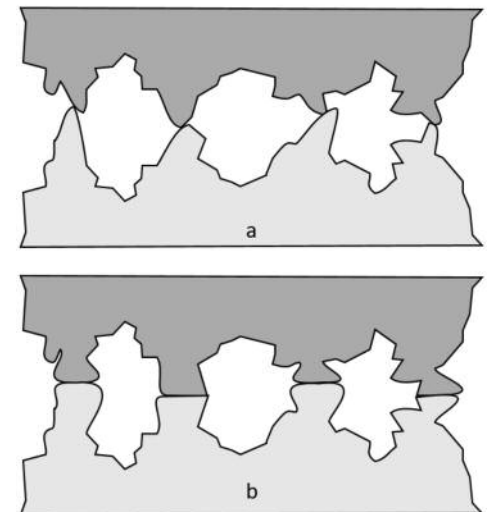


Figure-1 - The-top-image-a-shows asperities-under-no-load-The-bottom-image-b-depicts-the-same

**Our Mission** is to advance the science, technology and application of welding and allied joining and cutting processes worldwide, including brazing, soldering and thermal spraying. AWS Detroit provides support for the industry in many ways, including:

- 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);
- Student Memberships (evaluated each year);
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- Technical and Educational Opportunities.

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of breaking though most (but sometimes not all) surface related irregularities (corrosion, coating, etc.) and providing us with a better condition for welding.

It makes sense the plastic deformation is most pronounced between the electrodes. However, the material right around the electrodes is also subjected to a significant compressive load. This constrained material around the electrodes, which I have heard called an Expulsion Dam, or plastic doughnut, (see ATWE Sep-18) is very localized in nature. And in some cases, can be a bit hard to discern with the naked eye (i.e. nothing appears to be indented, etc.). Also, the amount will vary based on electrode contact face geometry, and base material strength. Regardless, this constrained material sets the stage for the eventual formation of a successful resistance spot weld. As an aside, the Projection Welding (PW) process also acknowledges the effect of bringing parts together under load, and how it can change things (ATWE Dec-22).

It should be noted a complete RSW weld schedule chart will account for the type and strength of the material being welded (ATWE Sep-21), to include information on the required weld force (think lbf or kN) and the specified electrode with its associated contact face. But if we specify both the electrode force, and the electrode contact face, we can actually define the pressure, or stress, we are subjecting the material to.

How much stress are we talking about? For a 0.18" (4.5 mm) face diameter under 500 lbf (2.2 kN), how about 20.3 ksi (140

MPa). This value is potentially near the Yield Point of Mild materials. Raise the force to just 600 lbf (2.7 kN) on the same electrode cap and the stress is now 26.4 ksi (182 MPa).

The material between the electrodes under full weld force is now ready for the application of current. It is with the onset of current flow that we get to see the true nature of the RSW process. This will be the point where we continue this discussion in our next column."

*\*Neil deGrasse Tyson hosted updated versions of COSMOS, using a version of Sagan's Ship of the Imagination from the 1980 series.*

*\*\*Figure from Friction mechanism of polymers and their composites, June 2018, Macedonian Journal of Chemistry and Chemical Engineering, Gordana Bogoeva-Gaceva, et. Al. Figure-1a (asperities under no load) and Figure-1b (asperities under load).*

If you have more questions about this topic, contact Don Maatz at:

R&E Automated Systems  
70701 Powell Road, Bruce Township, MI 48065  
Office: (586) 228-1900; Direct: (734) 793-2304  
[dmaatz@reautomated.com](mailto:dmaatz@reautomated.com)

Donald F. Maatz, Jr. is with R&E Automated Systems and serves in the capacity of Laboratory Manager. 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.

***The AWS Detroit Section hosted a technical night at the Ukranian Cultural Center on resistance welding of 3" long seams on complex part fitups. The information was presented by Warren Peterson.***



*Warren Peterson presents to the audience.*



*Warren is presented with a mug by Don Maatz following the presentation.*

# AWS Detroit Section is Now Accepting Applications!



## WELDING SCHOLARSHIPS for POST SECONDARY TRAINING, ASSOCIATE OR BACHELOR DEGREE in WELDING ENGINEERING, WELDING ENGINEERING TECHNOLOGY or RELATED FIELDS with WELDING CONTENT

For students pursuing Post-secondary training or an Associate/Bachelor Degree in Welding Engineering, Welding Engineering Technology or Related Fields with welding content. These scholarships provide money to be used for the student's tuition, books, or lab fees for one year. To be eligible for these scholarships, you **MUST BE ENROLLED** in a certification-based program or two (2) or four (4) year engineering degree program in Welding, Welding Technology, or a related field. The program supports students who either live in, or are attending schools in the state of Michigan and the following counties in the province of Ontario: Essex, Chatham-Kent, and Sarnia-Lambton.

An on-line\* application form (with supplemental instructions) is now available on the AWS Detroit Section website, under the 'Scholarships' tab. [Click Here.](#)

Applications open December 1, 2023. The deadline for completing the application process for the 2024-25 academic year is April 1, 2024.\*

For 2023/24 the Detroit Section was able to award **33 scholarships** totaling **\$64,000** to students from **7 different schools.**

\*Please reach out directly if you have a paper application to send in ([dmatz@reautomated.com](mailto:dmatz@reautomated.com))



## 2024-2025 SCHOOL YEAR • RULES and APPLICATION INSTRUCTIONS

**Completion of this application automatically considers the student for the "Amos and Marilyn Winsand Scholarship" and the "Robert P and Mardell D Wilcox Vocational and Engineering Scholarships." These are AWS Foundation endowed scholarships.**

- 1) Applicant must be enrolled in a Welding Engineering Program, a Welding Engineering Technology Program, a Post-Secondary Technical Program (Welding Certification targeted program), or a related field of study with a strong welding content.
- 2) Students are eligible to apply for Detroit Section scholarships if they are permanent residents of the state of Michigan or the following Ontario counties: Essex, Chatham-Kent, and Sarnia-Lambton. Students who are temporary residents attending school in the state of Michigan or the following Ontario counties: Essex, Chatham-Kent, and Sarnia-Lambton are eligible for non-named scholarships. Preference will be given to students who are permanent residents of the Detroit Section territory, including Ontario counties: Essex, Chatham-Kent, and Sarnia-Lambton.
- 3) The Detroit Section Scholarship Committee administers the AWS Detroit Section Scholarship program, with the assistance of the AWS Foundation. The Committee also selects the recipient of the Amos and Marilyn Winsand Foundation Endowed scholarship as part of this scholarship application.
- 4) AWS Detroit Section Scholarships are paid in varying amounts based on individual awards. If an applicant is awarded a scholarship, the payments are made directly to their qualifying educational institution. Payments are made through the AWS Foundation.

### Application Instructions

The information requested on the application form is self-explanatory. Please fill out the form completely.

The AWS Foundation inter-active application is available either at [awssection.com/detroit](https://awssection.com/detroit) under the Scholarships tab. Or by going directly to the AWS Foundation scholarship page: [scholarship.aws.org/](https://scholarship.aws.org/)

For more additional information about the scholarship program, please see [aws.org/foundation/page/scholarships](https://aws.org/foundation/page/scholarships)

AWS membership is encouraged of all welding aspirants.

**In addition to the application form, you must enclose or attach the following:**

- **Transcript(s)**  
Official scholastic records or grade transcripts from the high school, college or university you attended during the recent school year.
- **Personal Statement and Work Experience**  
Ambitions, goals, background, and other factors that will help the selection committee understand your commitment to pursuing a welding career.

**Application  
Postmark  
Deadline  
April 1, 2024**

# January Hotline

## Three female artists 'welding' way into Lansing art scene

**WLNS-TV** From January 2023: Three female artists are "welding" their way into the Michigan art scene. The "Working Hands" exhibition, featured at the Lansing Art Gallery and Education Center, is an installation celebrating female welders that have taken over a male dominated space. [Read More Here...](#)

## New welding workforce data now available

**AWS** From April 2023: The industry projections, labor statistics, and demographics are now updated on [weldingworkforcedata.com](http://weldingworkforcedata.com). Endorsed by the American Welding Society (AWS), the website shines a light on the industry and is the go-to source for welding workforce labor statistics. [Read More Here...](#)

## Mike Rowe wants more philosopher-welders

**REASON** (From Oct. 2023): Mike Rowe is best known for his stint hosting the Discovery Channel's long running Dirty Jobs, where he performed the sort of work we all rely on but don't want to think about too much, from cleaning septic tanks to putting hot tar on roofs to disposing of medical waste. Rowe frequently talks about the value of the hard work that's too often dismissed by a society fixated on sending everyone to college. [Read More Here...](#)

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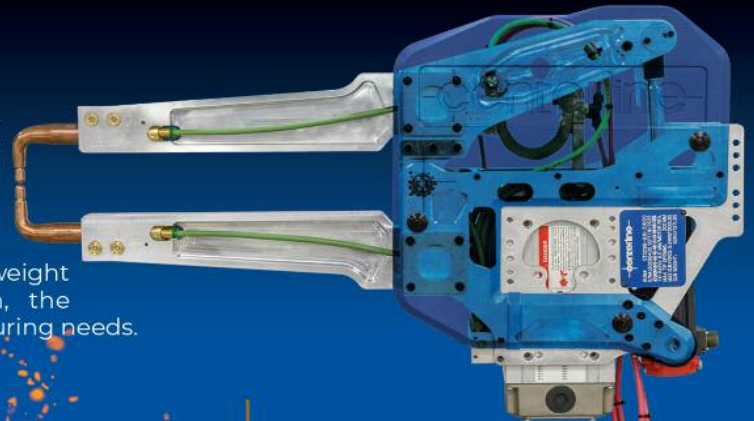
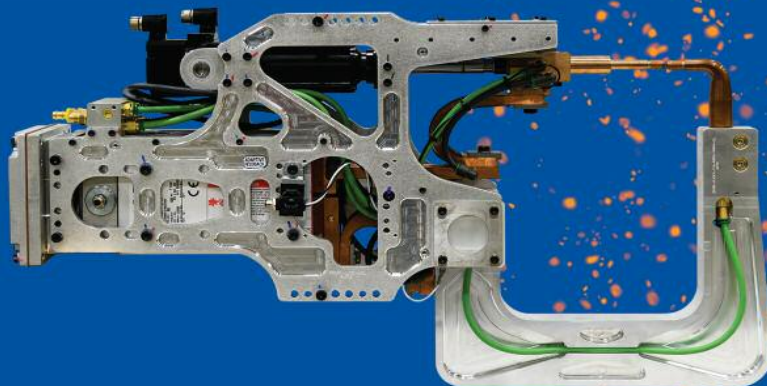
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**Seth LeFevre**  
 Bay City, MI  
 Ferris State University  
 Welding Engineering Technology  
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 District 11 - 061-Saginaw Valley

Thank you to the AWS Detroit Section for awarding me with the section scholarship! It will go a long way toward covering my expenses for education and fulfilling my dream of being a weld engineer!

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# Reflecting On Days Gone By ... June 1996



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Matt Height, Dave Beneteau, Cliff Dake, Ron Grenda, Debbie Plutschuk, Karl Lis, Keith Bernier, Bill McLaughlin, Linda Koch, Bob Wilcox, Jim Dolfi, John McKenzie, Mike Poss



1996 Quiz the Experts (Grand Rapids)

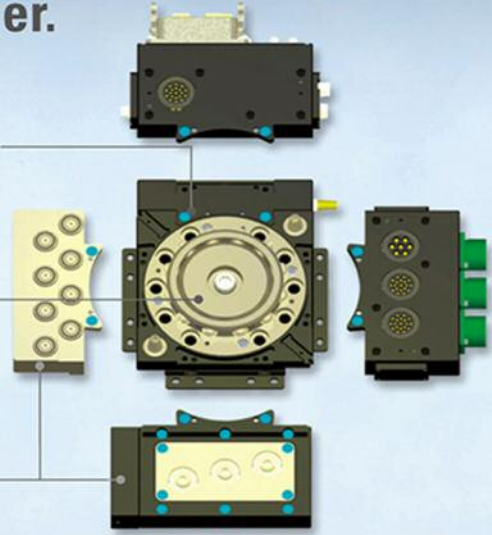


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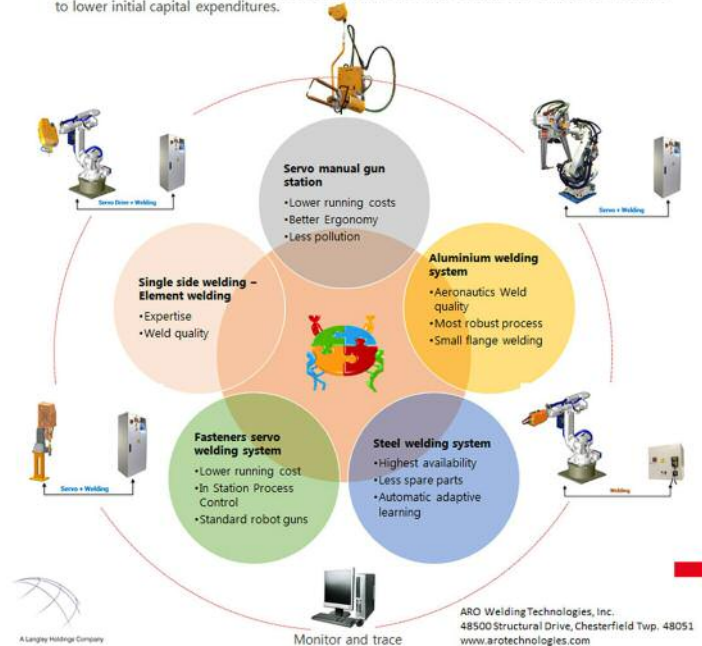


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# Thank You

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**Ryan Konieczny**  
Grosse Pointe Park, MI  
Ferris State University  
Welding Engineering Technology  
Detroit Section Scholarship  
District 11 - 011-Detroit

Thank you to the AWS Detroit Section!

I really appreciate the generosity of this scholarship for the 2023-2024 school year. It is a blessing to have received this gift. I currently work at Tank Truck Services in Warren, Michigan, where I do a lot of hands-on fabrication work. I enjoy my job and am looking forward to the next two years of my degree at Ferris State University. This scholarship money will help free up some personal funds to make the next few years financially less stressful. I am beyond grateful for the support.

Thank you,  
Ryan Konieczny

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**Cody Langlois**  
 Marne, MI  
 Ferris State University  
 Welding Engineering Technology  
 Detroit Section Scholarship  
 District 11 - 051-West Michigan

Dear Detroit Section Scholarship Donor(s),  
 I am very grateful to have received the Detroit Section Scholarship. I am enrolled in the Welding Engineering Technology program at Ferris State University, and I look forward to using this scholarship to assist me in my academic endeavors. I am a member of the American Welding Society (AWS) Student Chapter, and I attend various community service events in my time outside of school. This scholarship will help me as I strive for success in the Welding Engineering Technology program, helping me to financially cover the cost of attending college. I will use this scholarship for tuition costs, as well as books and study materials that I may need for my upcoming Senior year. I am in my official Junior year Welding Engineering internship currently, helping me continuously learn about our industry. I will complete my bachelor's degree in the Spring of 2024 and as I complete my education at Ferris State University, I am very thankful for receiving your wonderful scholarship. Every year that I have received this scholarship in the past, I have attended the Detroit Section student dinner, and I look forward to doing it again this year!

Sincerely,  
 Cody Langlois

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