American Welding Society®
DETROIT SECTION

e-Bulletin

APRIL 2023

Inside This Issue

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.

Affiliated With
ESD
THE ENGINEERING SOCIETY

May 2023 AWS Detroit Section Technical Meeting

RAM SOLUTIONS

Location: Ukrainian Cultural Center
26601 Ryan Rd. 48091 Warren, MI USA
Thursday May 11th 5:30 – 8:00pm

Registration is Free and spaced is limited
RSVP by 5-02-2023 to save your spot!

Sign up here!
www.eventsquid.com/contestant-reg.cfm?event_id

Agenda

5:30-6:00 Cocktails and Networking in the Carpathian Ball Room

6:00-6:15 AWS Awards Ceremony

6:15-7:00 Dinner and presentation on Resistance Spot Welding - Ultrasound Inspection
Three different models : Robotic, manual, and flaw detection

Live Demos will include

Demos of the PHAsisNEO VOGT Ultrasound Equipment
Showcase of Ram Solutions Automation Equipment Product Portfolio

By attending 2 PDH hour certificates are available to interested individuals - See AWS Chairman
Bring your business card for a chance to win a raffle

About the Speakers

RAM SOLUTIONS, INC.

John Macdonald is the Director at RAM Solutions, Inc. for sales and engineering of Industrial Automation equipment. Previously, he has held positions at Stellantis, WTC, and ThyssenKrupp Budd Company mainly in RSW and Joining engineering. He has been involved in full vehicle launch/RSW certifications, equipment/welding specifications and various joining labs innovation development. He started in the RSW field in 1994 contracted to General Motors and has over 28 years of technical experience.

ULTRASONICS VOGT

Goeran Vogt is the Director at VOGT ULTRASONICS GmbH, Germany, for development, manufacturing, sales and support of Ultrasonic Equipment for nondestructive inspection via hand and specialized via Industrial Automation. He founded VOGT company in 1983 (today about 55 employees). He is Level-3 in aerospace as well as industrial applications since more than 35 years.
Goeran has been involved in all nondestructive inspection with ultrasound in the field of automotive and aerospace applications

Chairman's Message
Mark D. Gugel

April is finally here! We all know that April means spring, but ever since 1996 April means national welding month to the American Welding Society. Welding technology plays a critical roll in the infrastructure and equipment that we use in our daily lives. At its inception in 1919, the AWS was formed to help the country meet its needs in World War I. At that time processes included gas welding, thermite welding, and resistance welding. AC welding was not yet invented. By the time of World War II, arc welding and the associated shielding gas technologies were taking hold. Between then and today we have had countless developments in welding including the use of lasers, ultrasonic, friction-stir, drawn-arc, capacitive-discharge, explosive and more. What has not changed is the desire for strong – efficient – cost effective – sound joints.

As we shrug off the cold of winter, it is worth looking back at the last month. We had a very informative technical night sponsored by FANUC America and Lincoln Electric. More than forty of our members were on hand to learn about collaborative welding. Our meeting started off with Old Timers awards. Scott McGregor and Ted Gibbs were honored with their 35-year life awards from the AWS. Four other awardees John Canterberry, Steve Gurgul, Donald Crist, and Joseph Horth could not attend the meeting to receive their 25-year silver awards; we would like to honor them as well. Immediately following the awards, members listened to Jason Munson of FANUC and Alex Monico of Lincoln Electric discuss Collaborative Robot Technology for Welding. Attendees were given a tour of the FANUC America facility in Rochester Hills. The tour finished with live welding demonstrations on collaborative robots. Thank you to the FANUC America and Lincoln Electric staffs for putting together this evening.

We are glad to start off this month on April first with our annual Ladies' night gala. John Pippin and his team have an entertaining night planned at the Motor City Casino Hotel. Kristi and I are personally looking forward to attending. Next month we look forward to our awards meeting / final technical meeting of the 2022-2023 fiscal year. This meeting will be sponsored by Ram Solutions. Please visit our web page AWS Detroit Section – AWS Detroit Section – No. 011 (**awssection.com**) to see details of the coming meeting.

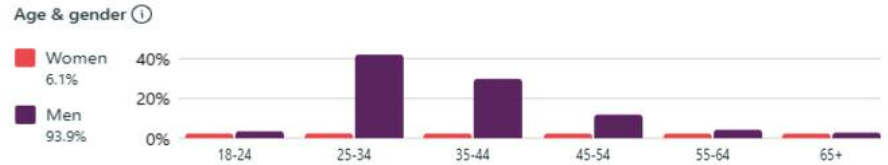
Best Regards/mit freundlichen Grüßen,
Mark D. Gugel, P.E., Ph.D.
Product Development Metallurgical Applications Consultant - Welding, United States Steel, Advanced Applications Technology

Social Media Update

If anyone has anything they would like posted to Facebook and/or LinkedIn please send it to Christian Megna: christian.a.megna@gmail.com

As of 03/14/2023, during the past 28 days Facebook page has had:
- 9 posts in past 28 days
- 5 new page likes - **54.5%** change past 28 days
- 142 page visits -**25.3%** change past 28 days
- Posts reached 676 people
- 52 people engaged with posts **74.3%**
- 7,865 total page likes
- 9,303 page followers - △**2** change past 28 days

As of 03/14/2023, during the past 30 days LinkedIn page has had:
- 17 posts - **21%** change past 7 days
- 448 post views - **1%** change past 7 days
- 2,640 total members
  - 81 active members - 0% change past 7 days
  - 10 new members



AWS DETROIT SECTION EXECUTIVE COMMITTEE

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Amberlee Haselhuhn	*Webmaster*
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Cody Nichols	*Hotline Coordinator*
Kenny Martz	*Meeting Reservations*
Todd Horseman	*Meeting Reservations*

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

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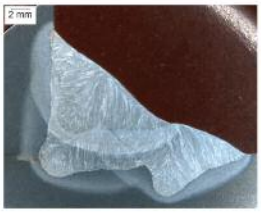
Patron's Fund Donations

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 **steve.gucciardo@external.stellantis.com**



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Ask the Welding Engineer

By Donald F. Maatz, Jr.

Q: ***"Is it possible to re-weld a weld nut (in our case a M10 Hex) after it has been welded once?"***

A: "In our first column (ATWE Dec-22), we initiated a discussion about the repair of Projection Welded (PW) weld nuts. From there, the conversation morphed into more or less a thought experiment about PW weld schedules with long weld times (ATWE Jan-23). We then started a discussion about Set-Down (ATWE Mar-23) and how the industry views it. This column finishes (hopefully) the conversation regarding Set-Down.

To help provide a feel for the varied differences, we will take a look at the requirements of several different standards as they apply to PW and the measurable criteria known as Set-Down and Parallelism. The following items are paraphrased a bit, but capture the needed detail.

…shall be set down so that the gap between the base of the fastener and the mating part is no more than 0.3 mm or 30% of the pre-weld projection height (whichever is lesser) and is not a criterion for welds to be discrepant…

…side-to-side gap shall not differ by more than 0.2 mm, but is not a criterion for welds to be discrepant…

…discrepant if the maximum gap is >0.1 mm, with a target value is 0.00 mm…

…discrepant if more than five degrees off perpendicular…

…discrepant if the gap between the welded parts exceeds 20% of the original projection height…

…parallelism of the welding projections of max. 0.1 mm relative to the contacting surface…

As can be seen from the above snippets of information, no one agrees with any one. The values are either percentages of projection heights, or hard values, or both. Some consider anything in excess of the stated values to be cause for a weld discrepancy, while others do not. Some address both Set-Down and Parallelism, while others address only one of them. Frankly, this level of inconsistency with regard to a single measurable characteristic is rare in the welding industry. And as I eluded to earlier, almost none of this relates in any way to the push-off strength of the final assembly.

The possible reasons for these differences are varied. However, I think they can be boiled down to a few broad categories.

- In-Process vs. Structural: Are the projection welds in question strictly manufacturing welds, or are they needed to carry an actual load? An example of a manufacturing application might be a weld nut that has a subsequent bolt assembly process that might be important (think a door hinge), but once torque is achieved and everything is sandwiched together, the welds on the actual nut could instantly disappear and there would be no loss of functionality. It is fully acknowledged any eventual repair of the product may be more difficult, but the part as assembled will be fine.
- Type of Loading: The vast majority (but not all) of PW applications have the load applied to the part in a compressive nature. It does not take much imagination to visualize the various OEMs processing their PW applications in differing manners (think applied loads in tension or shear), each with their own level of acceptability requirements.
- Assembly Issues: In some cases, the design can be so tight that excessive (or even moderate) measured gaps might result in part fit-up issues. This can be seen in areas where many items are coming together in a confined space. As an example, an automotive B-pillar.
- Issues in Paint: While less common, it is possible for the space between the welded parts to act as a fluid trap. The vast majority of weld nuts are located in areas where this not an issue. However, in those cases where any kind of redeposit can occur, you can bet the chorus requesting a 'Zero' Set-Down weld will be loud, and persuasive.

All that being said, what is my issue with Set-Down, and how the industry views it? To be a bit more specific, it is not uncommon to see folks conflate Set-Down with push-off. By this, I mean they think it is not possible to have a good push-off value unless you have good Set-Down (meaning zero to minimal gap). And the opposite must also be true – If I have good Set-Down, I must then have good push-off values. Not to be the bearer of bad news, but both points of view can be very wrong. In fact, if all I needed for a good PW was Set-Down, then the long weld time approach would be the norm, and not the much less than optimal exception.

Projections really are like electrode caps in that it is very possible to have mismatches between size and base material (see ATWE Jan-19). My experience with regard to Set-Down is (providing you have good push-off) to keep the value to around 20-30% of the projection height, and hold parallelism as tight as possible. However, one can still run into issues due to varying base metal gauges, projection geometries, material coatings and strengths. And those might be the topic of a future column."

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 at:

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dmaatz@reautomated.com

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

American Welding Society®
DETROIT SECTION

1973 50 YEARS 2023

AWS-Detroit HSWC

50 Years and Still Going Strong!

Can you remember what was going on back in 1973? Maybe you were in primary school, or perhaps not yet even born. After all, we are talking about 50 years ago. That being said, there was some history being made back then. And to set the stage for a look at both the present, and the future, it might help to take a small step back, to the past.

The world population clocked in at roughly 3.2 billion people back in '73 – we are over 8 billion now. The year also saw plenty of firsts: the first graduate to receive a degree from a work-at-home program, and the creation of the first portable cell phone. 1973 was also the first year for the AWS-Detroit Section to hold what turned out to be its annual high school welding contest (HSWC).

A part of the Metro-Detroit region since 1924, the AWS-Detroit Section has grown to be a strong voice within the welding community. And that growth has only been possible by the seemingly never-ending efforts of our volunteers. With a stated mission to advance the science, technology, and application of welding, a HSWC seemed like great way to encourage new folks to participate in this important industry.

It was this motivation that drove Fred Ellicott, at that time the welding instructor at Schoolcraft College and a member of the AWS-Detroit section board, to join with other like-minded volunteers and hold the first HSWC at Schoolcraft.

Of course, they did not know it at the time, but this first event, held in 1973, was the start of a very long relationship between the AWS-Detroit Section, and high school welding students and their instructors. Quickly the event developed its own unique flavor. Fred Ellicott was a bit of a story teller, and as the MC, he would always start the day talking to the students, encouraging them to look towards the future.

A few highlights as the event has grown over the years are noted below:

- *Held at Schoolcraft College until growth made it a less than optimal experience for both the student participants, and their instructors*
- *Moved to Washtenaw Community College in 2014*
- *The value of the student handouts, and performance prizes, now exceeds $15k*
- *The scholarships available total $9,000*

The volunteer team supporting the HSWC also grew as part of the process of putting on the event. This included the group getting together the morning before for breakfast. It was their time to reconnect prior to the contest with industry colleagues. This developed a strong camaraderie amongst the volunteers, and it would serve them well going forward.

Even COVID could not stop the HSWC and its dedicated group of volunteers. But as is often the case, one needs a bit of a set-back before you can move forward. The 2020 rendition of the HSWC was just such an example. The team had gathered material, registered schools, and obtained many donated prizes, and at the last minute, a decree from the State shut it down. All were disappointed – No one more so than the AWS-Detroit Section Chairman of the HSWC, Glenn Kay II. The next year (2021) Glenn and the team were able to work around this issue, and in a very unique way.

The 2021 HSWC looked a bit different that year as they navigated those unpredictable times. The decision was made to hold a virtual competition. This would provide high school seniors the opportunity to compete while doing so within the safety of their own schools. The driving force was to make the competition possible as it was felt the students deserved the opportunity to compete, in spite of the pandemic limitations being imposed. Once the plans were finalized the work began. Zoom meetings were held, projects cut, packaged and delivered to each participating school (by Glenn himself). Afterwards, completed projects were picked up (again, thank you Glenn) and judged.

What did the team discover while going through this process? Grateful students and instructors. Students that, because of the pandemic, did not get as much time under the hood as they normally would and the HSWC offered them an opportunity to keep pushing themselves forward. An amazing job by all concerned, and one of the many hidden silver linings you often discover when things do not go as planned.

This year's event will be on Friday, May 12th at Washtenaw Community College. Once again, the entire team of volunteers will be able to see the fruits of their labor *Continued on page 7*

HSWC 50th Anniversary

continued from page 6

as dozens and dozens of students gather to test their knowledge and skill. Specific events include a written exam, an aluminum project, and finally a pressure vessel-multi weld process project.

There will be, of course, prizes and scholarships. But there will also be a glimpse into the future as we witness students from all over the state test their skill as they prepare for their career in welding. The idea that I might walk through a building, or drive on a road, and actually interface with their work some day is amazing.

So, congratulations to Fred, Glenn, and the many, many other AWS-Detroit Section volunteers that have been a part of the HSWC over the years. Who knew what was started 50 years ago would have such a long lasting legacy.

The year 2023 marks the 50th anniversary of the AWS-Detroit Section High School Welding contest.

If you are interested in supporting, please reach out to the following:

PRIZE DONATIONS CAN BE SENT TO:
Washtenaw Community College
Larry L. Whitworth Occupational Education Bldg, Rm OE 102 R
4800 E. Huron River Drive, Ann Arbor, MI 48105
ATTN: Glenn Kay

FINANCIAL CONTRIBUTIONS CAN BE MADE TO:
AWS-Detroit Section
PO Box 530305
Livonia, MI 48153
ATTN: HSWC

Reflecting On 1996

Days Gone By...Quiz The Experts

April Hotline

Restricted-access welder performance qualification

AWS Welding Digest

Incorporating special welder test requirements at the beginning of projects could have significant advantages. It's well known that work such as fired heater and boiler fabrication requires high-quality welds. Unless you are fortunate enough to be already utilizing a company that specializes in boiler or furnace fabrication or happen to have highly talented welders on the job, restricted-access performance testing is seldom thought about until the project is over budget and behind schedule because of weld rework.

Achieving sharp bends in aluminum with the right tooling

The Fabricator

Aluminum is being used increasingly in manufacturing and metal fabrication for its lightweighting and noncorrosive properties. Fabricating aluminum brings with it a few challenges unique to bending and forming — getting sharp bends, for one. As with any metal, fabricators must be vigilant in preventing cracking in the bends. Fabricators also need to take measures to reduce or eliminate galling. Because aluminum is softer than steel, it is more prone to marking, which is especially problematic on appearance parts.

Become an AWS Instructor

Turn your knowledge and work experience into a rewarding teaching opportunity. You can apply to develop and teach your own training course or become an exam prep instructor.

Training tomorrow's welders with today's technology

AWS Welding Digest

Training the next generation of welders begins with you — and Miller is here to help. To meet current and future industry demands, Miller offers innovative augmented reality welding training solutions to not only enhance classroom learning but to recruit, educate and train new students.

Hilary Peach: Field notes from a sister in the brotherhood of welders

ConstructConnect

In her new book, Canadian author Hilary Peach highlights a trade shrouded in mystery and pushes back against the stereotype that men and women in construction are constantly at odds. "I didn't want to write a book where women are victims and men are mean, or anything like that. Because that was such a small part of my experience," Peach said in an interview with the Journal of Commerce.

Report on Scholarship and National

Don Maatz

The National scholarship application process opened December 1st. You can follow the following link for details: **Click Here**

To date, there have been 86 applications submitted that would potentially be eligible for a AWS-Detroit section scholarship. We will not be able to confirm eligibility until we receive the data from National.

How to pass a weld test

AWS Welding Digest

Matt Scott, welding instructor and department chair at Portland Community College (PCC), discuss the finer points of fitup with PCC welding student Vanntha Mao. In my journey as an instructor and inspector, I've monitored countless weld tests.

Continued on page 10

April Hotline *continued from page 9*

Report from Section Webmaster — Amberlee Haselhuhn

The PayPal button fix has been applied and appears to be robust. The solution was to pull all PayPal buttons to a separate payments page. Website updates no longer appear to impact the PayPal button functionality. Also …

- Patron Logos were updated
- The March eBulletin was posted
- Ladies Night Post & Events Calendar updated including all finalized details and registration links
- Created an Event, Posting, and update for the High School Welding Contest. Update includes a great article from Don Maatz on 50 years of HSWC
- Added a Save the Date to the events calendar for the golf outing with one simple application. Don't leave money for school on the table. Be sure to watch and apply next season.

AWS names 2023 President — Industrial Distribution

The American Welding Society has announced the induction of its new president, Dennis K. Eck. Eck has been in the welding supply industry more than 40 years and has been active as a member and leader in the AWS Houston section and District 18 for 35 years. Elected to serve as vice president of AWS from 2018 to 2022, Eck was inducted president Feb. 24 and will serve for the next year.

Time is up …

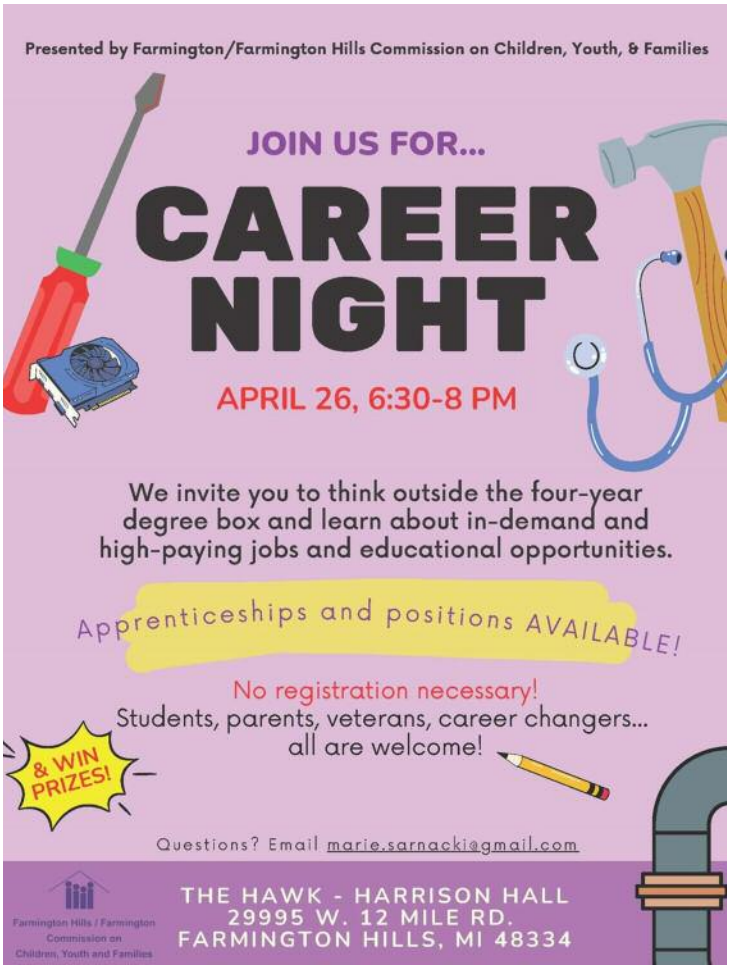
Time to Apply for AWS Foundation Scholarships has passed for this season. The AWS Foundation offers more than 200 different scholarships ranging from $1,000 to $5,000+ each for students who are passionate about welding and want to make a difference in our industry. You can be eligible for multiple national, district, and local section scholarship opportunities

From 'quiet hiring' to 'rage applying,' here's the top workplace buzzwords of 2023 — and what they mean — Business Insider

Attitudes towards work are changing as employees adjust to a post-pandemic normal. There are now a slew of new terms to describe work, from "rage applying" to "Bare Minimum Monday."

Career Night

Farmington/Farmington Hills is looking for companies to register and attend their career night April 26th. Contact Marie Sarnacki, marie.sarnacki@gmail.com or visit their website for more information.



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March Technical Meeting Recap

Fanuc and Lincoln Electric hosted a technical night which detailed the use of collaborative robots for arc welding.

A presentation was given which highlighted the benefits and uses of the new robots, and then a hands on demonstration was performed along with a tour of the Fanuc assembly facility.

At the beginning of the night, awards were given out for lifetime AWS amembers.

(L to R): Ted Gibbs, Scott McGregor and Mark Gugel.

Presented by
AWS Detroit Section

CWI ROUNDTABLE

What do you think is important for new CWIs to know? What questions have you run into as a new or prospective CWI?

Saturday
June 24ih, 2023
9:00am - 11:00am

Roush
12068 Market St
Livonia, MI 48150

THE SCHEDULE:

- 9 to 9:30 - Coffee, Donuts, and Networking (oh my!)
- 9:30 to 11 - Discussion

Space is Limited - RSVP to elalinsky@ipgphotonics.com by June 17th, 2023

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American Welding Society
DETROIT SECTION
50th Annual High School Welding Contest

Friday, May 12, 2023 • 8:00am – 3:00pm

(CONCLUSION OF CONTEST TIME MAY VARY)

Washtenaw Community College

4800 East Huron River Drive, Ann Arbor, MI 48105

O.E. Building (Larry Whitworth Occupational Education Building)

CONTEST:
Phase 1: Written Exam
Phase 2: Aluminum Project (GTAW)
Phase 3: Pressure Vessel-Multi Weld Processes (SMAW/GMAW/FCAW)

ELIGIBILITY: High School Seniors enrolled in a vocational welding program.

REGISTRATION: Registration form (below) must be emailed to Glenn Kay @ **gkayii@wccnet.edu** no later than April 12, 2023 or the application will not be accepted. This deadline is critical to allow time to prepare for the event, projects, etc. Once I receive your registration form, a more detailed schedule will be sent along with finer details regarding weld processes, filler wire diameter and type. No prints will be sent prior to the event this year.

CAPACITY: Each school can bring up to **20 high school senior competitors** and up to **20 contest observers**. Final counts will be needed for food, etc.

AWARDS:

First Place:	$2,500.00 Scholarship
Second Place:	$2,000.00 Scholarship
Third Place:	$2,000.00 Scholarship
Fourth Place:	$1,500.00 Scholarship
Fifth Place:	$1,000.00 Scholarship

PRIZES: Scholarships are one-time awards and will be paid to the award winner's college of choice to cover tuition, fees, books and supplies when pursuing a certificate or degree in welding in the 2023/2024 academic year. **Final scholarships requests must take place no later April 1st, 2024**. All contestants and observers will receive an AWS tee shirt. Educational and professional welding equipment will also be distributed to the top 5 finalists as donations permit. Typical prizes distributed include welding machines, torch outfits, welding helmets, jackets, gloves, safety glasses, cutting shields, angle grinders, etc. Last year's giveaways were estimated to be over $15k and all who attended went home with something!

FOOD: Breakfast and lunch will be provided. Bagels, donuts and juice will be served upon arrival as well as pizza/subs and drinks for lunch-all compliments of the AWS Detroit Section!

CONTEST PROJECTS: The welding contest is divided into **three (3) phases**. All three phases listed below will be part of the student's final score and used to determine the top 5 finalists. The top 10 finalists pressure vessel will be hydrostatically pressure tested to 1000psi with the Instructor and Competitor witnessing the pressure test.

PHASE 1: WRITTEN EXAM
Each contestant will be given a written exam to test their basic knowledge in the following areas: OFW (Oxy-Fuel Welding), OFC (Oxy-Fuel Cutting), Brazing, SMAW (Shielded Metal Arc Welding), GMAW (Gas Metal Arc Welding), FCAW (Flux Core Arc Welding) and GTAW (Gas Tungsten Arc Welding) processes. These questions will be multiple choice, conducted in a computer lab and the test score will be included in the contestants overall final score of the competition and projects.

PHASE 2: ALUMINUM PROJECT (GTAW)
This project will include fillet and groove welds on aluminum base material in various positions. Base material, filler metal, prints and project instructions will be provided during the day of the competition.

PHASE 3: PRESSURE VESSEL (SMAW/GMAW/FCAW)
This project will include fillet and groove welds on 3/8" carbon steel base material using SMAW, GMAW and FCAW process in all positions. Base material, filler metal, prints and project instructions will be provided during the day of the competition.

REQUIRED PPE & TOOLS: Each student is required to bring the Personal Protective Equipment (PPE) and Tools listed below. PPE items will not be supplied and failure to bring PPE or Tools will result in the student being unable to compete. No power tools will be permitted for use on any of the contest projects.

PPE:
1. All leather gauntlet style welding gloves
2. Welding helmet
3. Welding jacket
4. Z87 rated safety glasses
5. All leather above the ankle work boots
6. All cotton or denim clothing and under garments

Tools:
1. Bucket or tool box to hold tools
2. File
3. Tape Measure
4. Combination Square
5. Chisel
6. Soapstone/Scribe
7. Ball Peen Hammer
8. Wire Brush
9. Chipping Hammer
10. Pliers/Wire Cutters

INSTRUCTOR/ADVISOR PARTICIPATION: Each school attending will need to have an instructor/advisor competent in the area of welding as they will be tasked with conducting the judging/scoring for the student projects. This way, we can involve the Instructors in the competition process and to allow them to see first-hand how students perform during a completion. All student projects will be taken home with them at the end of the competition.

American Welding Society®
DETROIT SECTION

50th Annual High School Welding Contest

REGISTRATION FORM

Once completed, email the Registration Form (2 pages) to Glenn Kay at **gkayii@wccnet.edu** by the submission deadline which is: **April 12, 2023**. Please complete all fields below or your form will not be accepted. Once Glenn receives your registration form, a more detailed agenda will be emailed out. If you do not send Glenn this form by the listed deadline with all fields filled out, you will not receive any further details regarding the contest and you will not be permitted to compete during the event. Should you have any questions about this form or the contest itself, please feel free to reach out to Glenn Kay via email for assistance.

INSTRUCTOR INFORMATION (REQUIRED)

SCHOOL NAME & ADDRESS: _____

INSTRUCTOR'S NAME: _____

EMAIL: _____ PHONE: _____

COMPETITOR INFORMATION (REQUIRED)

1) FIRST NAME _____ LAST NAME _____ T-SHIRT SIZE _____
EMAIL _____ PHONE _____

2) FIRST NAME _____ LAST NAME _____ T-SHIRT SIZE _____
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COMPETITOR INFORMATION (REQUIRED)

18) FIRST NAME _____ LAST NAME _____ T-SHIRT SIZE _____
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19) FIRST NAME _____ LAST NAME _____ T-SHIRT SIZE _____
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20) FIRST NAME _____ LAST NAME _____ T-SHIRT SIZE _____
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OBSERVER INFORMATION (REQUIRED)

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