



# The Motor City's Sheet Metal Conference Maintains Its Driving Force

**This AWS Section-led event attracts participants and presenters with advanced welding research**

Over the last decade, I've been fortunate to attend and report on the AWS Detroit Section's Sheet Metal Welding Conference (SMWC) many times. Every time the event is held — typically every other year — it continues to leave a lasting impression. SMWC XX: Advances in Automotive Welding & Joining Conference, held October 22–24, 2024, was no exception, highlighting recent developments in welding and joining solutions that enable new generations of vehicle design and construction. Conference committee members take pride in organizing this event, which has been held since the 1980s. Their responsibilities include early planning (sometimes in conjunction with another organization), choosing the theme, calling for abstracts, securing a venue, selecting the welding and joining research that will be presented, booking keynote speakers, seeking sponsorships for breakfasts and breaks, and providing on-site services when the event begins.

**The Next Generation Steps Up.** SMWC XX, led by the next generation of welding professionals, proved inspiring and encouraging, setting a high standard for AWS Section members to aspire to in the future.

Andrea Orr, a research engineer at Ford Motor Co. and a past AWS Future Leader, served as conference chair. The role required extensive behind-the-scenes coordination — answering queries, building the event's agenda, and thinking critically. After the event, she assembled several members of the 19-person committee to go over highlights and discuss ideas for the next conference.

Another example of positive involvement came from Robert Watson, a past AWS Future Leader and a welding engineer at General Motors (GM), who took on the role of site coordinator. He planned the meals and room setups at the event's venue, Laurel Manor. Kevin Teng, a weld development engineer at GM, served as the vendor chair. Other committee members helped with advising, technical chair, member, webmaster, and treasurer duties.

**Keynote Speeches, Sessions, and More.** The conference featured three keynote speeches. Hassan Ghassemi-Armaki with GM presented "Artificial Intelligence in Automotive Welding: From Body-in-White to Battery Cell Welding," and Marco Opitz with TRUMPF discussed "Advancements in Laser Technology: From Science Fiction to Modern Manufacturing."

Read their feature articles in this *Welding Journal* to learn about those topics. The last keynote was by John Catterall from JCAT Engineering on "The Road to 100% Simulation."

The organized sessions showcased liquid metal embrittlement (LME), battery welding, aluminum spot welding, steel linear welding, resistance welding predictive tools, inspection and simulation for electrification, aluminum resistance spot welding (RSW), laser welding, advancement in RSW, aluminum fusion welding, inspection methods for RSW, mixed material joining, and characterization of electrode behavior. More than 40 presentations occurred and many stood out, including but not limited to determination of LME-free process windows for component-scale RSW of 3<sup>rd</sup> generation advanced high-strength steel, investigating performance and reliability of resistance spot welds on additively manufactured battery tabs, production comparison of an automotive door assembly using RSW and refill friction stir spot welding, the effect of multiphased current and external magnetic field on RSW of hot-stamped AA7075, and development of constant DC chopping spot welding technology for three sheets stacks with high sheet-thickness ratio.

SMWC presentations are significant within the welding industry, and some have been published in papers in the *Welding Journal*. Notable examples include "Improving Aluminum Resistance Spot Welding in Automotive Structures" in 2013 about GM's Multi-Ring Domed electrode, "Spot Welding Different Sheet Metal Grades and Gauge" in 2014, "Effects of Welding Wire Composition in Aluminum Laser Beam Welds" in 2017, and "Pulsed Arc Welding of Battery Tabs for Vehicle Electrification" in 2022.

**Attendees Continue to Return.** Attendees vary from students and professors from all over the country to professionals in the field employed by various automakers, resistance welding companies, major manufacturers, suppliers, and institutions (from near and far, including Honda in Japan, Technische Universität Dresden in Germany, and Tecna in Italy). Retired individuals and past chairs continue to participate, pitching in where needed and learning from the sessions. Attendees can meet well-known leaders in the field and recent graduates launching their careers, access conference proceedings, and earn professional development hours.

Over 145 people, 100 of whom were first-time visitors, attended the conference. Additionally, 65 individuals participated in the vendor display. I like seeing familiar faces and hearing about their successes. A great example of this was reuniting with Liya Amanuel. She presented at the last SMWC as a graduate fellow in the welding engineering program at OSU. Since then, she has graduated, moved to Detroit, become a welding engineer at Tenneco, and returned to this year's conference as the chair of the mixed material joining session.

**Vendor Display Highlights.** The SMWC vendor display is an enjoyable night to which the welding community is invited. Participating companies typically specialize in automated welding and assembly lines, machine vision technology, resistance and projection welding consumables, cutting

tool innovations in tip dressing, and more. Knowledgeable representatives talk to guests at booths while showing their brochures and equipment. In addition to visiting vendors, participants can socialize and dine on hors d'oeuvres. This year, more than 30 companies participated, matching numbers in recent years.

**Attend the Next Conference.** Don't forget to check [sections.aws.org/detroit](https://sections.aws.org/detroit) for details about the next event, set to take place in 2026, where a new chair and committee will be in charge. [WJ](#)

**KRISTIN CAMPBELL** ([kcampbell@aws.org](mailto:kcampbell@aws.org)) is managing editor of the *Welding Journal*. Pictures courtesy of SMWC XX Advisor Michael Palko.



*At the registration area, Jerry Gould from EWI (center), who has attended and chaired sessions at many SMWC conferences, picks up his badge.*



*More than 40 presentations took place during the conference, spotlighting recent developments.*



*SMWC XX Keynote Speakers (from left) John Catterall, Hassan Ghassemi-Armaki, and Marco Opitz pose with Conference Chair Andrea Orr.*



*Michael Karagoulis, another long-time attendee, asks questions after a talk. He also served as chair of the characterization of electrode behavior session and a committee advisor to the event.*



*During the 2024 SMWC vendor display, Andrea Orr and Kevin Teng made rounds speaking to exhibitors, and attendees reunited with industry colleagues and made new connections.*

