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Connection Is Key

Fixing the labor gap is on everyone’s mind right now. This issue provides a good opportunity for us to think outside the box in how we go about business and connecting with each other. I believe part of the answer will require us to bring more interpersonal skills, leadership, and compassion into our workforce and keep these qualities an integral part of how we do business.

Success Is More Than Working Hard

Following my college training, I worked hard steadily for many years with a focus in the quality and nondestructive examination industry. I eventually found myself at a premier steel fabricator located in Clackamas, Ore. This company taught me the value of hard work and gave me more than just an employment opportunity. I learned the value of teamwork, diversity, cooperation, accountability, and much more. They also realized the value of working with organizations outside of the business and supported my involvement. These experiences granted me access to continued learning and mentorship that helped me grow and advance in my career. Through company support, I was able to participate in a multitude of technical welding committees, including those at AWS, which I’ve been a member of for more than 20 years. Ultimately, my former employer’s support impacted my decision to remain with the company for many years, and though I now work independently, I still maintain valuable relationships within the company and believe partnerships can bring a greater good to the whole.

Mentorship Matters More Than Ever

For years, fabrication and construction firms have struggled to find qualified and reliable workers. The pandemic coupled with the recent federal investment in infrastructure and manufacturing have exacerbated the problem. Mentorship and partnering can help put people and projects on the fast track. We can share knowledge and resources. If you have something to offer, be the one to offer help. And if there is something you need, have the courage to ask. You might be surprised with what you get.

Within this challenge to recruit and retain employees with the skills we need also lies an opportunity that bears more fruit than just filling vacant positions. Leaders will need to rise above, offering mentorship that includes valuable interpersonal skills training such as verbal and nonverbal communication, the ability to handle conflict, teamwork, empathy, listening, and maintaining a positive attitude. Interpersonal skills permeate all areas of life and are equally important in both personal and professional lives. I am technically minded by nature and have had to work hard to hone my interpersonal skills, but I have reaped the rewards. Even after years of leadership and life coach training, I continue to look for ways to improve my skills and bring compassion to the board room and the shop floor.

Our Call to Action

AWS was brought forth to advance the technical side of the industry, but as a workforce that stands on the shoulders of all the great people that built this country and industry, it is our responsibility to help the next generation sustain a high level of capability not just with improved codes and standards but also through recruitment, retention, mentorship, community building, and a vision for the future.
AWS has empowered the welding community through educational programs for more than 100 years. To stay at the forefront of welding education and serve different industry sectors, the organization continues its commitment to education through its Powerfully Enlightening campaign. With this latest effort, AWS is adding new courses and offering members and nonmembers the tools needed to face new challenges and emerging technologies.

“Welding is a dynamic industry with endless learning opportunities, no matter where someone is in their career,” said Executive Director and CEO Gary W. Konarska II. “Through AWS Education, we offer welding education for the entire career arc. You can develop new skills, discover the latest technology, brush up on foundational principles, or prepare for a certification.”

Availabilities Abound

AWS Education offers new and experienced welding professionals a selection of in-person and virtual education opportunities, including the following:

■ For educators and institutions, AWS provides industry-leading curriculum, guidelines, and support to help teach welding students using proven principles. New courses, including Lean Management for Welding Productivity and Solution Selling for Welding, are among the many courses offered.

■ From ready-to-go lesson plans to convenient online courses, AWS’s resources make teaching basic concepts (including safety, mathematics, and process fundamentals) easier to provide hands-on instruction that will resonate with students.

■ Depending on their needs and preferences, participants can learn directly from experienced AWS instructors or go through an online class or webinar at their own pace.

“With AWS Education and Training, you don’t have to choose between quality training and convenience,” said Alicia Garcia, director, education and training. “Everything you need to support your career is at your fingertips.”

Studying Best Practices

No matter which AWS education path is chosen, participants will get the most up-to-date information and best practices, backed by the globally recognized authority that sets the standards for the welding industry. While they don’t need to be an AWS member to take advantage of training resources, educational discounts are one of many perks of membership.

Go Online

To learn more about AWS’s Powerfully Enlightening training resources, visit aws.org/education.
November is a month of reflection and gratitude. As the 100th year anniversary of the Welding Journal winds down, our current and past publishers reflect on their favorite memories and biggest challenges while at the helm of the century-old publication.

Jeff Weber
Publisher 1987–2004

I started at AWS as assistant editor of the Welding Journal in 1977, after serving as managing editor and international editor of the Welding Engineer magazine at Jefferson Publications in Illinois. I then became editor of the Welding Journal in 1982, followed by publisher/editor in 1987 and served in that capacity until I moved to AWS administration in 2002. I served as senior associate executive director of AWS until my retirement in 2013.

What are your best Welding Journal memories?

My favorite memory from my time at the Welding Journal was seeing many publications staff members advance in their careers. I would like to say I helped some of them learn the ropes, so to speak, but they also picked up the intricacies of the magazine publishing and printing business on their own. It’s a complicated business, to be sure, and I am proud of any part I may have played in mentoring other employees as they moved up the ranks.

Another fond memory was seeing the Welding Journal gain hard-earned respect in the publishing industry. This was born from the many major awards the magazine received from Folio magazine, the Florida Magazine Association, and other publishing organizations.

Andrew Cullison
Publisher 2004–2017

During my time at the Welding Journal, I held several titles, including managing director, publisher, editor, senior editor, and technical editor.

What are your best Welding Journal memories?

One of my fondest memories at the Welding Journal was becoming the first staff recipient of a Charlie Award from the Florida Magazine Association. Other stand outs include expanding the Journal to an international audience with the publication of Welding Journal en Español and visiting manufacturers and writing articles about their welding operations.
What were the biggest changes to the Welding Journal during your time as publisher?

Mary Ruth Johnsen
Publisher 2017–2020

I am a true AWS success story. Even though I had a journalism degree and had experience working at a publishing company and the Orlando Sentinel newspaper, I had been out of journalism for nearly ten years, so I was just happy to get my foot in the door. I started out as an editorial assistant/secretary, then moved up the ladder to assistant editor, associate editor, senior editor, editor, and finally publisher.

What are your best Welding Journal memories?

My favorite memory is presiding over the Welding Journal and Inspection Trends for the 100th anniversary of the American Welding Society. So few organizations reach that milestone, and for AWS to celebrate 100 years was a remarkable achievement. I thought the Welding Journal did an outstanding job covering the anniversary. I felt we achieved a nice balance between the history of the Society and welding with what we might expect for both in the future. Although we had something on the anniversary in every issue that year, the “official” 100th anniversary issue was April 2019. For that issue, I thought the articles in which the past AWS presidents detailed the accomplishments of their tenures as president and their thoughts on the future of AWS and the welding industry and the one in which AWS Gold members explained what AWS was like when they joined and how their membership helped shape their lives were especially interesting. And since I had a more than 30-year career at AWS, I personally knew all of the past presidents who contributed, so it brought back a lot of memories for me.

Another favorite memory was establishing better rapport with the Tech Papers Committee and working toward a higher impact factor for the Welding Journal. I was pleased to read that the Welding Journal recently received its highest Impact Factor ever.

Annette Alonso
Publisher 2020–Present

What are your best Welding Journal memories?

My favorite memory so far is seeing the January 2022 issue, the first issue of the redesigned Welding Journal, in digital and print formats.
What have been the biggest changes to the Welding Journal during your time as publisher?

We have seen an evolution of print media, challenged by shifts in advertising needs, increasing postal services fees, and worldwide paper shortages, to digital delivery and online media platforms. It’s been changing for the past decade but has rapidly picked up the pace in the last few years with normalized dependency on the internet and social media. Print is still important and sought after, depending on the audience it serves, yet it likely will not serve as the primary (previously the only) communication vehicle for our members in the years to come.

CINDY WEIHL (cweihl@aws.org) is senior editor of the Welding Journal.
ENHANCE WELDING EFFICIENCY ON CONSTRUCTION JOBSITES

For construction contractors, staying on schedule and delivering high-quality completed projects within budget are critical to remaining competitive. Finding efficiencies in the operation and taking steps to improve performance in structural field welding can help contractors reach these goals. These actions are especially important as many operations continue to deal with disruptions caused by supply chain issues and skilled labor shortages — two challenges that can significantly affect project timelines and productivity.

Paying attention to the following four tips on welding operations can help improve efficiency and performance on the jobsite.

Tip 1: Consider the Welding Process

The advantages of self-shielded flux cored arc welding (FCAW-S) over shielded metal arc welding (SMAW) may seem obvious to some, but there are many construction and erection companies still completing multipass welds with the SMAW process. SMAW is useful for many field applications, including handrail and stair installation as well as erection of open web steel joists. The SMAW process is likely here to stay due to its mobility, reliability, and simple setup.

However, switching to a self-shielded flux cored welding wire for projects requiring larger multipass welds offers several benefits (Fig. 1), including higher deposition rates and greater deposition efficiency.

- **Higher deposition rates.** Commonly used ¼-in. 7018 SMAW electrodes typically yield deposition rates of 3 lb/hour or less. In contrast, a comparable all-position flux cored welding wire can double or even triple this production.

- **Greater deposition efficiency.** Deposition efficiency refers to the percentage of the electrode that actually makes it into the final weld. After every weld, whether an electrode is fully or partially used, the remaining electrode stub usually ends up in the same place, which is on the ground or in the waste bucket. This adds to an operation’s consumable costs. For example,
when using a ½-in. 7018 SMAW electrode, operations are lucky to achieve 70% efficiency after taking into account flux and stub loss. Switching to a flux cored welding wire can deliver efficiency gains of 10% or more due to the increased ability to feed and deposit molten metal into the weld joint. This is coupled with the fact that welders can start and stop at any time without consumable waste.

Tip 2: Choose the Right Welding Wire for the Job

When it comes to structural welding with a self-shielded flux cored welding wire, many contractors use what is known as a T-8 welding wire. T-8 is shorthand for E71T-8, which is the classification listed in AWS A5.20, Specification for Carbon Steel Electrodes for Flux Cored Arc Welding. T-8 welding wires are versatile and suitable for welding in all positions. They provide good impact toughness at low service temperatures and can be used for multipass welds of unlimited thickness. Note that these welding wires operate using direct current electrode negative (DCEN) polarity.

While the appeal of using a single welding wire for an entire project is understandable, consider switching to a T-6 welding wire, which is classified as E70T-6 in AWS A5.20, for flat and horizontal welds. Although its use is limited to the flat and horizontal positions, compared to T-8 welding wires, T-6 welding wires typically yield higher deposition rates along with improved operating characteristics and ease of use at very high amperages. They also provide good penetration and typically produce good low-temperature impact toughness. It should be noted that unlike T-8 welding wires, T-6 welding wires are designed for welding using direct current electrode positive (DCEP) polarity.

Many producers of T-8 and T-6 welding wires perform filler metal testing in accordance with the requirements of AWS D1.8, Structural Welding Code — Seismic Supplement, Annex A. These welding wires are informally known as seismic wires. This is because AWS D1.8 is the seismic-related supplement to AWS D1.1, Structural Welding Code — Steel. By performing testing in accordance with AWS D1.8, Annex A, users of the seismic self-shielded flux cored welding wires gain insight into the performance of the welding wire at different heat inputs.

While T-11 (classified as E70T-11) welding wires were a popular choice for structural field welding prior to the introduction of T-6 and T-8 welding wires, they come with some limitations. First, they don’t offer the same level of toughness as the seismic wires, which limits their ability to be used in these applications. Second, they have pass limitations per many fabrication codes. For this reason, they are generally not used for material thicknesses or weld sizes greater than ½ in.

Although T-11 welding wires have some limitations, they are a popular choice for ancillary connections on thinner material. They are also available in a much wider range of diameters and offer improved ease of use compared to T-8 welding wires.
In the field, welding cables can easily become worn or damaged. Be sure to regularly inspect and maintain welding cables. They should be taken out of service as necessary to avoid safety hazards.

**Operational efficiencies can be driven by utilizing newer welding technologies and following best practices.**

Look for welding solutions that help keep workers safer, more comfortable, and productive. This includes reducing operator fatigue and the risk of slip, trip, and fall injuries on the jobsite. For example, ArcReach™ technology lets operators adjust parameters right where they’re working using the wire feeder or SMAW/gas tungsten arc welding (GTAW) remote, eliminating the need to walk back to the power source every time changes are needed.

**Conclusion**

As many construction contractors and steel erectors search for ways to offset project slowdowns and labor challenges, they can look to the welding operation for solutions. Operational efficiencies can be driven by utilizing newer welding technologies and following best practices. The bottom line is helping welders be more efficient in the field.

**Tip 4: Choose Solutions That Improve Jobsite Safety**

A safer jobsite is more productive and profitable in the long run because there is less lost time due to accidents and injuries. Many equipment and technology choices play a role in jobsite safety. These options range from quieter engine drives to versatile helmets that provide coverage for both welding and grinding.

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Meet this diver, welder, inspector, musician extraordinaire

When four-year-old Robert Murray was given the option of being an audience member on *The Price Is Right* game show or staying outside to stare at welders at work, he chose the latter.

“I could care less about the show,” he reminisced. “I wanted to stay outside and watch these guys welding on that building.”

Murray’s mother relented and allowed her son to stay outside with the doorman and watch the erection of a New York City high-rise building. In losing his spot at the televised show, Murray gained a first-row seat to the world of welding.

“Ever since then, I’ve had this fascination with welding,” he recollected. “It was magic to me.”

Murray’s young mind was also influenced by children’s television shows that featured underwater divers, such as *Diver Dan* and *Sea Hunt*.

However, it was not until college that Murray got to turn his childhood dreams into reality. During this time, he learned to dive and worked locally on the Chesapeake Bay. He also earned a bachelor’s degree in industrial technology – manufacturing engineering from the University of Maryland, College Park, Md., where he concentrated on welding.

Making a Career Out of Adventure

Looking back, Murray insists he’s never seen a dull moment in his 30-plus years working on ships, pressure vessels, and life support systems for both government and industry.

He launched his career at Westinghouse Electric Corp., Oceanic Division, Annapolis, Md., where he was a field service engineer/diver from 1979 to 1985 before taking a job with the U.S. Navy in 1985. These positions gave him the opportunity to work on the complex, state-of-the-art electronic/mechanical systems and components used in the U.S. Navy’s Deep Submergence and Airborne Mine Countermeasure programs.

From 1989 to 1997, Murray became the underwater welding engineering project manager for Naval Sea Systems Command (NAVSEA), Arlington, Va., which allowed him to combine his welding and diving skills to achieve underwater maintenance and repair of surface ships and submarines.

“That was the best of both worlds,” he said.

In this role, Murray was instrumental in helping the U.S. Navy’s underwater welding program develop weld repair procedures. He also aided in the development of underwater welding and nondestructive examination techniques (i.e., magnetic particle and ultrasonic testing methods).

“We did some of the first underwater weld procedures that ABS [American Bureau of Shipping] approved for commercial ships,” he recalled.

More recently, Murray worked at NAVSEA’s Washington Navy Yard, Washington, D.C., before retiring in 2016. In his 31 years with the organization, Murray was involved with a myriad of interesting tasks. He oversaw the technical management of the deep submersible *Alvin* (DSV-2), helped design and construct the USS *Jimmy Carter* (SSN 23), managed diving programs for Naval Special Warfare, aided a submarine rescue program that resulted in the execution of the deepest underwater wet weld in ocean engineering history at a depth of 2000 ft, led efforts in support of antiterrorism projects for ships afloat, and much more.

Although he’s encountered many challenges throughout his career, Murray identifies his work with the USNS *Yano* as the most difficult job he’s completed. A drydocking mishap caused the 980-ft ship to sustain damage and sink, and Murray was called upon to perform waterborne repairs.

“We ended up cutting out five areas of hull plate and putting in plating while it was still floating without sinking the ship again. The sections were probably 5 x 7 ft,” he said. “This had never been
Robert Murray is the winner of the *Welding Journal*’s 100th anniversary profile contest.

done waterborne on a ship before. It was one of the most rewarding projects because we did it while everyone was saying it couldn’t be done.”

Because every ship breaks differently, Murray explained that no two jobs are ever the same. This makes every underwater welding job a challenge, which Murray has always strived for.

“I’ve enjoyed everything I’ve done in my whole career. Looking back, there isn’t one thing I would do differently,” he affirmed. “I could have gone off and made more money doing other stuff, but money was never a driver for me. I always went after the work.”

Although he retired in 2016, Murray continues to take on jobs for the U.S. Navy as a consultant.

“Even now in retirement, I consult back to the Navy,” he explained. “I go on underwater welding jobs as a third-party monitor to make sure jobs are being done correctly.”

Murray’s three decades of hard work and dedication have not gone unnoticed. He has been recognized with several awards, such as the Navy Unit Commendation, Meritorious Unit Commendation, and Cold War Service Medal.

Taking the “Tire” Out of “Retirement”

Murray keeps a busy schedule as principal/owner of Max Plus Services, which provides the fabrication/welding industry with oversight services that include independent third-party surveillance for compliance to contract and code requirements. He is an AWS Certified Welding Inspector and Certified Radiographic Interpreter as well as an ASNT Level II in magnetic particle testing.

“I help people out with welding procedures and qualifying welders, but most of the time it’s third-party monitoring; so making sure everyone is doing their job correctly and making sure everyone has the right qualifications,” he stated. “So I’m not the guy in the water anymore.”

However, Murray admits that he sometimes can’t keep up with the demand for his services.

“Sometimes I get so much work, I think, ‘I need to retire again,’” he said with a laugh. “But there’s so much work out there.”

**Paying It Forward**

Murray has given back to the industry by passing along what he has learned. He has written and cowritten about underwater welding in several publications, including *Welding Handbook*, *Welding Journal*, *Inspection Trends*, *Underwater Magazine*, and more.

He’s also shared his expertise with the AWS D3B Subcommittee on Underwater Welding, where he served as vice chair, and the D3D Subcommittee on Underwater Cutting. Murray also stated that being involved in AWS committees allowed him to learn as well.

“You learn a lot from other people. One thing I know about welding is no one knows it all,” he said. “Anytime I meet someone else involved with welding, I learn something.”

Whenever he gets a chance, Murray also likes informing younger people about the benefits of a career in the welding industry.

“There’s a lack of interest from younger generations in this type of work,” he said.

He recommends that young people get an engineering degree or join a technical program.

“There’s so much work out there if you’re interested in doing that line of work,” he said. “Any kid out of high school can make a lot of money if they go and get the right training. Whether they get a four-year college degree or not, there is ample work out there for someone who is just interested in doing it.”

Murray has also taken his expertise to the skies. Between 1996 and 1997, he served as an advisor for NASA’s Astronaut Training Panel for the International Welding in Space Experiment.

“NASA would train the astronauts underwater and get them used to living in confined spaces,” he explained. “The astronauts get used to that environment before they ever go in space.”

**Marching to the Beat of His Own Drum**

While he was nurturing careers in the diving and welding industries, Murray also moonlighted as a percussionist. He played with the Annapolis Symphony Orchestra (1973–1993); Chesapeake Caledonia Pipe and Drums (1994–2012), where he served as the drum sergeant; and Celtic Bay (2012–present). He has collaborated with celebrities such as Leon Fleisher, Peter Bay, Isaac Stern, Phyllis Diller, André Watts, Charlie Byrd, Peaches & Herb, and Pure Prairie League.

Written by KATIE PACHECO, associate editor of the *Welding Journal.*

Robert Murray takes in the seaside with his four-legged friend, Max.