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SAFETY FIRST:
Finding the Right PPE for Your Needs

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AWS Promotes Diversity

AWS values diversity, advocates equitable and inclusive practices, and engages its members and stakeholders in establishing a culture in the welding community that welcomes, learns from, and celebrates differences among people. AWS recognizes that a commitment to diversity, equity, and inclusion is essential to achieving excellence for the Association, its members, and employees.

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Organizational Excellence: A Worthy Journey



Mary Bihrle
AWS treasurer

In 2023, the U.S. economy continued to grow at a reasonable pace with signs of improvement in the manufacturing sector. The stock market saw nice gains thanks to a solid economy, better-than-expected corporate earnings, and the anticipated end of Federal Reserve interest rate hikes. American consumer and labor market durability in 2023 helped calm the worries of an imminent recession; however, economic news and monetary policy remain key focus areas.

The favorable macroeconomic landscape also supported AWS's improved financial performance. In addition, AWS began the journey of organizational excellence, an initiative that strives to improve efficiency and quality, leading to increased customer satisfaction.

AWS revenues for 2023 reached a record high of $42.5 million, an increase of $3.4 million, or 8.7%, over the prior year. The increase is primarily due to the Certified Welding Inspector and certification products sold both domestically and internationally. The FABTECH 2023 show in Chicago, Ill., and our royalty stream also contributed to the increase.

The surplus for 2023 was $10.1 million, an increase of $1.5 million, or 17.4%, over the prior year. We were able to achieve our full-year operating goal for surplus. In addition, the revenue increase provided funding for the organizational excellence initiative.

The AWS reserve fund was $107.4 million, an increase of $20.4 million, or 23.4%. Positive market investment changes drove most of the change, and operational transfers also contributed to the increase.

The AWS Foundation's assets were $118.3 million, an increase of $21.4 million, or 22.1%. This change was also driven by positive market investment changes. Operational transfers of $7.6 million, partially offset by ordinary Foundation operating expenses, also added to the increase.

Financial strength gives us the ability to invest, and with all the opportunities ahead of us, we must choose wisely. In 2023, we embarked on the first year of our new three-year strategic plan and the beginning of the organizational excellence journey. Long-range planning helps guide our investment in foundational initiatives that lead to continuously improved organizational performance. Investments focused around three pillars: customer service, harmonization of operations, and core products.

Our goal for customer service is to deliver the service quality expected by our customers. Investments included a surge of personnel, training, workflow optimization, communication practices/tools, and more. Harmonization of operations means simplifying customer interactions and improved customer experience. Investments included revamping processes and workflow optimization/automation and incorporating seamless platforms/tools. The core products pillar focuses on enhancing existing products to meet customer needs while improving the quality and value of our offerings.

In closing, 2023 saw record sales, increased investments in strategic priorities, and a continuation of disciplined investment of our financial reserves. The financial strength of AWS and the AWS Foundation will support investment in the organizational excellence journey as well as future strategic opportunities. WJ

"2023 saw record sales, increased investments in strategic priorities, and a continuation of disciplined investment of our financial reserves."

BY MATTHEW HAAKSMA

Q: How often should our shop's emergency plans be updated, and other than the use of personal protective equipment, what important safety precautions should we be taking?

A: The fabricator's shop floor is unlike any other environment because it is constantly changing. Therefore, emergency plans must be established and updated with any changes to the shop.

According to OSHA 1910.38(c), Emergency action plans — Minimum elements of an emergency action plan, an emergency action plan must include, at a minimum, the following:

1. Procedures for reporting a fire or other emergency;

2. Procedures for emergency evacuation, including type of evacuation and exit route assignments;

3. Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;

4. Procedures to account for all employees after evacuation;

5. Procedures to be followed by employees performing rescue or medical duties; and

6. The name or job title of every employee whom other employees may contact for more information about the plan or an explanation of their duties under the plan.

When Layouts Change So Must Your Plan

Fabricated material alters the shop environment. A change to the number of workstations on the shop floor also alters the environment. Did you install a new piece of equipment that affects the exit route? All these scenarios call for an update to emergency plans — Fig. 1.

OSHA 1910.34, Coverage and definitions, defines an exit route as "a continuous and unobstructed path of exit travel from any point within a workplace to a place of safety (including refuge areas)."



Fig. 1 — An obstructed exit after the installation of new equipment.

Additionally, OSHA 1910.38(f)(3), Coverage and definitions — Review of emergency action plan, says an employer must review the emergency action plan with each employee covered by the plan when it is changed.

Fire and Health Precautions

Another important concern is if everyone knows where the nearest fire extinguisher is located as well as how to use it. If portable fire extinguishers are provided by the employer, OSHA 1910.157(g)(1), Portable fire extinguishers — Training and education, requires that the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use. Fire extinguishers should have a tag on them indicating when the last annual maintenance check was performed. The tag helps visually identify this maintenance for compliance with OSHA 1910.157(e)(3), Portable fire extinguishers — Inspection, maintenance and training. However, annual inspections aren't the only requirement. Portable fire extinguishers should be visually inspected monthly per OSHA 1910.157(e)(2), Portable fire extinguishers — Inspection, maintenance and training.

It is also a good idea to have members of the local fire department conduct a walk-through of your workplace, so they are familiar with the layout and any potential hazards. This could help emergency services personnel be better prepared in the event of an emergency at their workplace.

There are all sorts of rules and regulations in place intended to ensure you go home at the end of every workday, but work-related injuries and hazards are not the only events you should have an emergency plan for.

A quick internet search will show that year after year, in the United States, the leading cause of death is heart disease. Does someone at your worksite know CPR? Does your job have an automated external defibrillator (AED)?

According to the National Institutes of Health, emergency medical service (EMS) units average seven minutes from the time of a 911 call to arrival on the scene. That median time increases to more than 14 minutes in rural settings, with one out of ten encounters waiting almost a half hour for the arrival of EMS personnel. The cost of a CPR training class and an AED are less than the value you and your family would place on your life.

Be Proactive

As an emergency medical technician (EMT), I am trained in how to deal with emergencies. That training was extensive and repetitive. It was learning reinforced with doing.

As a welder, I am trained in how to weld. That training was extensive and repetitive. It was learning reinforced with doing. However, being a certified welder, just like being an EMT, is not a one-and-done certification event. It takes continued practice and training.

Having an emergency action plan sitting on the shelf collecting dust does not qualify as being prepared for an emergency. It requires learning reinforced with doing. You will never regret being overprepared. You will always regret being underprepared. WJ

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Optimal clarity is important because it determines how well an operator can see and work.

BY EMILY NELSON

SAFETY FIRST: Finding the Right PPE for Your Needs

Welding is a highly technical and precise profession, and success starts and ends with safety. As a cornerstone of the profession, safety is something that must be applied and adhered to every single day. Finding ways to reduce safety risks and enhance compliance is critical to creating a safer welding environment — and using proper personal protective equipment (PPE) is the first step. From your head to your feet, the right PPE will keep you safe, comfortable, and compliant.

A Twofold Approach to Helmet Safety

Wearing a helmet is an absolute must. Sparks, spatters, and bright light are par for the course when welding, making the right headgear an essential piece of PPE. Helmets safeguard operators from harmful UV radiation, infrared light, and flying debris. Even so, you still need to see well enough to lay a clean weld. There are two common styles of welding helmets that determine the amount of light that's visible before, during, and after welding: passive and autodarkening.

Passive helmets have a dark-tinted lens and remain dark — there's no switching from light to dark state. To inspect the weld, removing the helmet is necessary. Auto-darkening helmets, however, adjust the shades based on different welding processes and applications. When the helmet is in the down position, you'll be able to see through a light lens for clear evaluation of the weld piece. Once an arc is struck, the helmet automatically darkens for optimum safety.

Next, a less obvious component of helmet safety, but arguably as important, is comfort. A properly designed welding helmet offers greater protection against issues such as eye injuries and long-term musculoskeletal injuries in the neck and back muscles. Additionally, a helmet that has a sizable viewing area and an auto-darkening lens reduces eye strain when looking at the weld joint. It also minimizes the need for nodding associated with putting passive or traditional welding helmets in place by using a forward neck motion. A comfortable helmet, paired with better visibility, fosters higher operator acceptance and makes it more likely that the operator will keep their hood on throughout the day.

Choosing a helmet that provides the necessary protection against workplace hazards while also allowing the ability to weld with minimal restraint is important. For those considering an upgrade, the latest helmets on the market offer numerous distinct advantages, including the following:

- Reduced helmet weight and improved balance help minimize torque on the welding operator's neck and lessen fatigue.
- A larger viewing area and better peripheral vision give the welder a clearer view of the weld pool, weld joint, and overall work area without causing discomfort.
- Improved clarity, thanks to advancements in lens technology, can provide a brighter light state, twice the clarity, and enhanced contrast of the workpiece for a better view of the welding arc. The combination of these features gives welders more confidence while they

work, allowing them to see the weld pool more clearly and, therefore, avoid costly mistakes and lessen rework.
- Headgear with a flexible, ergonomic design and a comfort cushion at the back of the head can help achieve maximum comfort for all-day wear.

Since welding helmets do not provide unlimited eye, ear, and face protection, it is also necessary to wear approved safety glasses with side shields under your helmet.

A Clearer Look at Helmet Clarity for Improved Welds

Using a welding helmet that provides optimal clarity is key because it will determine how well you can see and work. Visibility shouldn't be taken for granted, and with so many welding helmet options on the market, it can be difficult to understand how different lenses and their clarity ratings will affect time on the job.

The American National Standards Institute (ANSI) regulates how clarity is measured in welding helmets and provides an ANSI marking to indicate compliance to the safety standards. Some manufacturers also apply the European Standards (EN) ratings of optical quality to auto-darkening lenses, although these ratings are not required in the United States. The rating tests occur across four classes of optical clarity:



The right PPE will keep you safe, comfortable, and compliant.

A properly designed welding helmet offers greater protection against issues such as eye injuries and long-term musculoskeletal injuries in the neck and back muscles.

1. How distorted is the welding lens?
2. How uniform is the welding lens and how many impurities are in it?
3. How consistently dark is the welding lens?
4. How consistently clear and dark is a welding lens when looking at the arc at a sharp angle?

Helmet ratings are graded across those four rating classes from 3 to 1, with 3 being the lowest rating and 1 being the highest. The ratings are typically shared as x/x/x/x (e.g., 1/1/1/2). These optical clarity ratings only rate one qualitative aspect of a welding lens and are separate from required ANSI welding helmet ratings.

If you want to find the welding helmet that truly gives you the best clarity in the United States, try the following:

1. First, look for a helmet with the highest percentage clarity rating within the safe limits of the light transmittance test in ANSI Z87.1, *American National Standard for Occupational and Educational Personal Eye and Face Protection Devices*, when the lens is in the light and dark states.
2. Second, ensure that your environment is well lit. If it is not, seek to enhance lighting conditions, either by integrating solutions into the welding helmet or as a stand-alone fix to help improve visibility.
3. Third, ensure you are using high-quality, ANSI manufacturer-certified magnifying lenses and cover lenses to get the clearest view.
4. Last, if provided, look for the optical clarity ratings with the EN standard. The first three (1/1/1/x) are the most important because they directly impact welding 100% of the time. The fourth rating (x/x/x/1) is less prevalent in welding operations.

Enhance Safety and Compliance with Respiratory Protection

Weld fume is part and parcel of welding, making it important to shield a welder's breathing zone from inhaling anything hazardous. Increased awareness of weld fume issues and safe environmental conditions continues to support the value of implementing proper respiratory protection in conjunction with a well-designed helmet. Powered air purifying respirators (PAPRs) and supplied air respirators (SARs) are more-advanced air purification systems used during the



The right helmet provides the right protection and allows the operator to weld without restraint.

welding process. They both use a complete facepiece (e.g., hood helmet or mask) that's connected to a unit that delivers clean air into the breathing zone. Whereas traditional respirators rely on lung power to draw air through the filters, PAPR systems use a battery-powered fan that pushes air through the filters and delivers clean air to the user. A SAR delivers clean air from an external source, like an air tank.

Recent technology advancements are driving productivity, safety, and comfort in these respiratory helmet options. Airflow improvements are among the benefits, including new designs that offer airflow distribution over the front of the welding operator's face and on the side of his or her head. By targeting airflow at these areas where blood vessels are located, the cooling effect is maximized as the airflow works to boost the human body's natural thermoregulation process. The ability to customize where the air blows on their face also helps keep the welding operator more comfortable and productive throughout their workday.

Outfitting Yourself for Safety

Welding is a full-body job, and with so much emphasis on above-the-neck safety, it's also important to remember to protect everything else from the neck down. Beyond helmets and PAPRs and SARs, these PPE categories should also be prioritized.

- **Clothing:** Short sleeves, shorts, and other clothing that exposes the skin to sparks and spatter must be left in your closet. Flame-resistant pants and long-sleeve shirts and jackets made from leather or heavy cotton mitigate burns by shielding skin from direct contact with hot metal or sparks.
- **Footwear:** Sandals, tennis shoes, and other cloth options leave feet susceptible to catching sparks, which can then smolder. High-top leather shoes or steel-toed boots are a must for welding.
- **Gloves:** Operators need to not only protect their hands but also retain full dexterity to complete welding tasks. Gloves need to marry protection and comfort to safeguard hands against burns, cuts, and electric shock. It's wise to opt for flame-resistant (and cut-resistant, as needed) hand protection when welding or handling welding materials.

Conclusion

On-the-job protection takes many forms, and each piece of safety gear contributes to providing the safest work environment possible. The right PPE should match the job at hand, deliver all-day comfort, and maximize efficiency. Safety shouldn't feel like a struggle. Once you're appropriately equipped, you'll find your PPE easier to use consistently day in and day out. WJ

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