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The United States is in the midst of a welder shortage that is expected to intensify as baby boomers age and the need for skilled labor grows. Studies show that there are more than 500,000 welders employed in the U.S. And the need for these skilled workers is only getting stronger as virtually all construction and manufacturing companies require some form of welding, from the production of assemblies to maintenance and repair. But finding a highly skilled and experienced welder is no easy task. Skilled welders are in short supply and the situation is only getting worse. According to AWS and other industry research¹, the average age of a welder is in the mid-fifties, with many approaching 60 years old. It is estimated that more than half of the industry's highly trained workforce is nearing retirement, creating a potential shortage of more than 200,000 skilled welders by 2010.

Compounding the problem is the fact that high schools, universities and vocational institutions across the country are struggling to recruit younger talent to meet the burgeoning demand for welders. Additionally, stereotypes have stigmatized the welding industry, invoking the image of a "dark" and "dirty" job with little prospect for advancement and salary growth. The fact is welding is one of the oldest and thriving fields that plays a key role in the vast manufacturing sector. A career in welding can be extremely lucrative and exciting, and can lead to high level employment in various industries. In fact, for those who are involved in the welding industry, there is a strong conviction that a large part of the U.S. economy is dependent on welding, and that continued advances in the field are necessary to increase productivity and strengthen the nation's financial stability.

The **American Welding Society (AWS)** is concerned about the welder shortage and is working with schools, policy makers, organizations and the media to bring attention to the matter. To keep the public aware of this impending crisis, this fact sheet has been developed to supplement other published research and studies located at: www.aws.org/research.

AWS KEY MESSAGES

- AWS is the world's largest organization dedicated to advancing the science, technology and application of welding
- AWS members include welding experts in diverse fields that touch nearly everything around us.

¹ "The average age of skilled workers at the 2,500 companies that are members of the National Tooling & Machining Assn. (NTMA) is 54, says NMTA president and COO Matthew B. Coffey." ["*Vanishing Breed and Retirements Loom*," by Michael A. Verespej -- Industry Week, v. 250, no. 7, pp. 30-36, May 7, 2001.]

- Many welders are highly skilled problem-solvers engaged in work that is critical to the nation's growth, such as energy production, highway transportation, manufacturing and military applications.
- The welding profession can offer a wide range of opportunities, including careers in engineering, education and the military.
- A welding career can lead to financial security, career advancement and important work in areas around the world.
- With virtually all construction and manufacturing companies requiring some form of welding, from the production of parts to their maintenance and repair, the field continues to be a thriving industry.
- High-tech manufacturing using advanced technology and newly developed materials is creating more uses for a highly educated welding workforce and expanding employment opportunities.
- A significant portion of the U.S. energy and transportation infrastructure was constructed in the 1950s and 1960s and skilled welders are in demand to maintain and update these structures.
- Computer skills are increasing in importance as welding professionals become responsible for programming computer-controlled welding machines, including robots and lasers.
- Our automotive industry is facing competition as never before and we need competitive welding techniques and skilled operators to keep it viable. Petroleum product distribution through pipelines needs to be upgraded and expanded and welders are critically needed to accomplish this.
- Few schools in the U.S. offer graduate degrees in welding engineering, while other countries turn out many hundreds, including Japan, Germany and Russia.

INDUSTRY SCOPE:

CURRENT AND PROJECTED SHORTAGE INDICATORS

A May 2002 commissioned study by the AWS and the Edison Welding Institute, "Welding-Related Expenditures, Investments, and Productivity Measurement in U.S. Manufacturing, Construction, and Mining Industries," found that:

- There are currently more than 500,000 welders employed in the U.S. Many are engaged in work critical to our nation's infrastructure and well-being, such as energy production, highway transportation, manufacturing, and military applications. (These figures do not include self-employed welders and welding professionals in non-production settings (welding equipment manufacturers and distributors, welding educators, consultants, and researchers, etc.).)
- There were at least 65,000 individuals in welding management and technical roles, such as supervisors, inspectors, and engineers, who focus on welding related operations.

- Welding expenditures represent no less than \$34.1 billion annually - \$325 for every household.
- Labor represented more than 70% or nearly two thirds of these expenditures, or \$22.4 billion in 2000.
- Nearly half of U. S. industries report difficulties locating qualified individuals with welding expertise – from apprentice welders to engineers.
- Most firms do not evaluate the role and contribution of welding in the complete manufacturing process.
- The shortage of qualified operators, technicians, and engineers in the field of welding is a potential threat to major U.S. industries.

ADDITIONAL DATA:

COMPILED FROM SELECT INDUSTRY RESOURCES

- According to the U.S. Department of Labor's Bureau of Labor Statistics, there will be nearly 450,000 welding jobs available in 2014.
- The average welder is in their mid-fifties. Many of these people will retire within the next 10 years, creating a tremendous need for skilled and experienced workers to replace them.
- The Bureau of Labor Statistics projects that the annual growth rate of workers 55 and older will be four times that of the overall labor force through 2014.
- According to the U.S. Department of Labor, the number of welders employed in the U.S. has declined about 10% from 2000 to 2005, from 594,000 in 2000 to 576,000 in 2005.
- While the number of welders employed in the U.S. has declined about 10% from 2000 to 2005, the U.S. Department of Labor Women's Bureau reports that the number of female welders in the U.S. has actually increased from 4.9% or 29,000 in 2000 to 5.8% or 33,000 in 2005.
- According to the U.S. Department of Labor's Occupational Outlook Handbook for 2006-07, job prospects in the field of welding should be excellent as employers report difficulty finding enough qualified people.
- According to the article, "*Change Creates Opportunity*," published in the summer of 2006 in the Hobart Institute of Technology newsletter, "25,000 students will begin their welding careers this year while 50,000 experienced welders are expected to retire".
- According to the National Association of Manufacturers, manufacturers will need as many as 14 million new skilled workers by 2020, in part to replace the aging baby boomers that make up nearly half of manufacturing jobs today.
- According to the National Tooling and Machining Association, 40% of member companies are turning away business due to lack of skilled welders.

- According to a major study by the National Association of Manufacturers and Deloitte, 81% of manufacturers polled report they can't find the skilled workers to keep their businesses competitive in a global 21st century economy.
- According to a U. S. Department of Commerce January 2004 report, "*Manufacturing in America*, "Industrial manufacturing is at its highest level in 20 years, and new orders are at their highest since 1950," creating a top job market for those skilled in welding, a primary manufacturing process.
- According to the U.S. Department of Education, today's youths—living and working in the 21st century—need solid academic preparation—not just for the Ivy League and other universities—but for the trades, automotive repair, high-tech manufacturing, and other jobs that provide self-supporting income.
- In 2000, the math skills of 83% of 12th-grade students and science skills of 82% of 12th-grade students were below the proficient level on the National Assessment of Educational Progress (NAEP, 2000).
- According to a recent study by National Association of Manufacturers, 60% of manufacturers typically reject half of all applicants as unqualified because of the lack of basic skill. Moreover, entry-level skills in manufacturing have become more sophisticated, requiring more education and training to get to the first rung.
- A 2005 report by the Manhattan Institute finds that 40% of ninth graders in 2002 will either drop out of school before completing high school or lack the needed skills for employment. At the same time, only 60% percent will get advanced training or seek a two- or four-year college degree after high school.

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