

Welders and Related Machine Operators



As proficient tradespeople, welders cultivate a robust skill set that's essential in manufacturing. Their skills and abilities are well-suited for their daily hands-on tasks, as well as tasks that involve identifying and resolving intricate issues. The technical knowledge that welders possess is very broad-based, including industry-standard software and common office programs. While the specific tasks of welders may not be directly transferable to other occupations, a lot of their skills, abilities, and knowledge can be applied to other occupations within the industry.

Skills

Skills are developed through training and experience, and are the practical proficiencies someone possesses. The following are top key skills welders employ in their work:

1. Operations & Control
2. Monitoring
3. Critical Thinking
4. Judgement & Decision Making
5. Complex Problem Solving

Tasks

Tasks are the assigned duties that an occupational group performs in their daily work. The following are the tasks welders most regularly encounter:

1. Inspect electrical or electronic systems for defects.
2. Read work orders or other instructions to determine product specifications or materials requirements.
3. Measure dimensions of completed products or workpieces to verify conformance to specifications.
4. Monitor equipment operation to ensure proper functioning.
5. Assemble metal or plastic parts or products.

Technical Knowledge

Technical Knowledge is the understanding of theory and utility of modern tools in a work environment. The following tools are used by welders regularly:

1. Computer-aided design software
2. Enterprise resource planning software
3. Industrial control software
4. Analytical or scientific software
5. Office suite software

Abilities

Abilities refer to the innate faculties that allow workers to carry out tasks and activities. The following are the top abilities that welders possess:

1. Deductive Reasoning
2. Manual Dexterity
3. Control Precision
4. Mathematical Reasoning
5. Problem Sensitivity

Skills Transferability Matrix

FOCAL's Skills Transferability Matrices analyze the transferability of an occupation across a multitude of other occupations on the basis of similarities in **skills, technical knowledge, tasks,** and **abilities** as outlined by the O*Net database. It aims to show workers how to leverage their skill set in changing occupations, planning a career path, and transitioning to other industries. It also assists policy makers and educators address changing skill sets and areas of opportunity for workforce entrants in developing industries. Employers can also use this tool in reskilling or upskilling workers to circumvent skills shortages, and reduce the hiring and training challenges.

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Occupations	Skills	Technical Knowledge	Tasks	Abilities	Total
Other wood processing machine operators	92%	83%	41%	90%	77%
Assemblers, fabricators and inspectors, industrial electrical motors and transformers	93%	83%	39%	89%	76%
Process control and machine operators, food and beverage processing	94%	75%	45%	87%	75%
Machinists and machining and tooling inspectors	81%	83%	43%	86%	73%
Foundry workers	92%	75%	38%	90%	73%
Assemblers and inspectors, electrical appliance, apparatus and equipment manufacturing	92%	83%	30%	87%	73%
Glass forming and finishing machine operators and glass cutters	91%	58%	53%	90%	73%
Fabric, fur and leather cutters	94%	67%	25%	90%	69%
Industrial sewing machine operators	92%	58%	31%	87%	67%
Structural metal and platework fabricators and fitters	92%	58%	31%	86%	67%
Tool and die makers	86%	58%	34%	88%	67%
General farm workers	91%	75%	0%	90%	64%
Contractors and supervisors, machining, metal forming, shaping and erecting trades and related occupations	66%	92%	13%	78%	62%
Supervisors, other products manufacturing and assembly	63%	83%	13%	74%	58%
Construction millwrights and industrial mechanics	69%	83%	0%	75%	57%

After scanning over 2,600 skills, technical competencies, tasks, and abilities of each of the 500 occupations as defined by the National Occupational Classification (NOC) system, a skills transferability matrix for welders and related machine operators is produced. In the matrix above, a high score is highlighted in green and indicates the high transferability potential of an attribute of an occupation with that of welders. Lower or no transferability areas are marked in red. Welders were found to share transferable attributes with other skilled trade and production occupations including machinists, tool and die makers, and machine operators. Welders share the most skills and abilities with various machine operator occupations, while their technical knowledge is transferable to supervisory roles in machining and metal forming trades. Welders also have common skills and abilities with assemblers and inspectors of electrical equipment. Overall, welders can leverage their skills, technical knowledge, and abilities to progress into supervisory positions in the workplace, or to transition to a diverse set of professions across a wide range of sectors and industries.

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