



TRAINING AND PROJECTS

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Course Title: Weld Carbon Steel Workpieces Using the Gas Metal Arc Welding Process in the Down-Hand Position

SAQA ID: 243066

NQF Level: 2

Credits: 8

Course Description:

This course is designed to provide learners with the necessary skills and knowledge to effectively weld carbon steel workpieces using the gas metal arc welding (GMAW) process in the down-hand position. It covers the fundamentals of the GMAW process, including equipment setup, welding techniques, safety procedures, and quality control measures. Learners will gain hands-on experience in performing welds, ensuring compliance with industry standards and safety regulations.

Course Objectives:

By the end of this course, learners will be able to:

- Understand the principles of gas metal arc welding and its applications.
- Set up and operate gas metal arc welding equipment.
- Perform welds on carbon steel workpieces in the down-hand position.
- Identify and troubleshoot common welding defects.
- Adhere to safety standards and practices while welding.

Benefits of Completing this Course:

- Acquire practical skills in gas metal arc welding, a widely used welding process in various industries.
- Enhance job readiness and employability in the welding and fabrication fields.
- Improve understanding of welding quality standards and inspection processes.
- Gain confidence in operating welding equipment safely and effectively.
- Receive a recognized qualification that supports career advancement in welding and metalworking.

Who Should Attend:

- Individuals seeking to start a career in welding or fabrication.
- Current welders looking to enhance their skills in gas metal arc welding.
- Apprentices and trainees in welding programs.
- Supervisors and quality control personnel in the welding industry.



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Assessment:

Assessment will be based on the learner's ability to:

- Demonstrate knowledge of GMAW principles and equipment.
- Set up and operate welding equipment safely and effectively.
- Perform quality welds on carbon steel workpieces.
- Participate in discussions and practical activities related to welding techniques and safety.

Specific Outcomes and Assessment Criteria:

By successfully completing this SAQA Unit Standard, learners will demonstrate competency in the following:

1. Understand GMAW Principles:

- Explain the fundamentals of the gas metal arc welding process and its applications in welding carbon steel.
- Discuss the advantages and limitations of GMAW compared to other welding processes.
- Assessment Criteria: Written assessment covering GMAW principles and applications.

2. Set Up Welding Equipment:

- Identify and assemble the components of gas metal arc welding equipment.
- Adjust equipment settings based on material type and thickness.
- Assessment Criteria: Practical exercise demonstrating correct setup of GMAW equipment for specific welding tasks.

3. Perform Welds in the Down-Hand Position:

- Execute welds on carbon steel workpieces using the GMAW process in the down-hand position.
- Ensure proper welding techniques and travel speed to achieve high-quality welds.
- Assessment Criteria: Practical assessment of performing quality welds, evaluated on criteria such as appearance, penetration, and consistency.

4. Identify and Troubleshoot Welding Defects:

- Recognize common welding defects (e.g., porosity, undercut, overlap) and their causes.
- Implement corrective actions to address identified defects in welds.
- Assessment Criteria: Written assessment on identifying welding defects and troubleshooting methods.



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5. Adhere to Safety Standards:

- Explain safety procedures and practices relevant to gas metal arc welding.
- Demonstrate proper use of personal protective equipment (PPE) and safe work practices.
- Assessment Criteria: Group discussion and practical assessment on safety standards and practices in welding operations.

By completing this course, learners will gain essential skills in gas metal arc welding, enabling them to perform quality welds on carbon steel workpieces and adhere to safety standards in various welding environments.