PERFORM PLASMA AND LASER BEAM WELDING

UNIT CODE: ENG/OS/WEF/CR/08/6/A

UNIT DESCRIPTION

This unit of competency specifies competencies required to prepare materials, set up plasma and laser beam equipment, application of safety in use of constricted arc at high velocities and elevated temperatures (plasma) in welding and cutting. It also includes competencies for use of concentrated light energy (laser beam) in welding and cutting.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicized terms are elaborated in the Range)*
1. Set up plasma welding equipment and materials	1.1 Interpreted working drawings as per job specifications 1.2 Materials, tools and equipment are selected as per job specifications 1.3 Joints are prepared as per working drawings 1.4 Set up ***plasma welding equipment*** as per job specifications
2. Carry out plasma welding	2.1 Safety and health is observed as per Workplace procedures and OSHA 2.2 Welded workpieces using plasma process as per job specifications 2.3 Examined weld joint as per ISO standards 2.4 Housekeeping is conducted as per workplace procedures
3. Set up plasma cutting equipment and materials	3.1 Interpreted working drawings as per job specifications 3.2 Materials, tools and equipment are selected as per job specifications 3.3 Prepared workpieces as per the working drawings 3.4 Set up ***plasma cutting equipment*** as per job specifications
4. Carry out plasma cutting	4.1 Observed safety as per workplace procedures and OSHA 4.2 Cut workpieces using plasma process as per job specifications 4.3 Examined kerf as per ISO standards 4.4 Housekeeping is conducted as per workplace procedures

5. Set up laser welding equipment and materials	5.1 Interpreted working drawings as per job specifications 5.2 Materials, tools and equipment are selected as per job specifications 5.3 Joints are prepared as per working drawings 5.4 Set up ***laser beam welding equipment*** as per job specifications
6. Carry out laser beam welding	6.1 Safety and health is observed as per Workplace procedures and OSHA 6.2 Welded work pieces using plasma process as per job specifications 6.3 Housekeeping is conducted as per workplace procedures
7. Set up laser beam cutting equipment and materials	7.1 Interpreted working drawings as per job specifications 7.2 Materials, tools and equipment are selected as per job specifications 7.3 Prepared workpieces as per the working drawings 7.4 Set up ***laser beam cutting equipment*** as per job specifications
8. Carry out laser beam cutting	8.1 Observed safety as per workplace procedures and OSHA 8.2 Cut workpieces using laser beam process as per job specifications 8.3 Examined kerf as per ISO standards 8.4 Housekeeping is conducted as per workplace procedures

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. Plasma welding equipment may include but is not limited to:	• Plasma welding PPE • Plasma welding machine • Plasma welding accessories
2. Laser beam welding equipment may include	• Laser beam welding PPE • Laser beam welding machine

Variable	Range
but is not limited to:	• Laser beam welding accessories
3. Materials may include but is not limited to:	• Metal tubing • Metal sheets • Metal plates • Metal bars

REQUIRED KNOWLEDGE

The individual needs to demonstrate knowledge of:

- Workplace procedures and OSHA.
- Plasma welding equipment and accessories
- Laser beam welding equipment and accessories
- Plasma cutting parameters
- Laser beam cutting parameters
- BS and ISO plasma and Laser beam kerf standards
- Plasma cutting safety procedures
- Laser beam cutting safety procedures
- Applications of plasma and laser beam welding
- Plasma and laser beam welding workplace housekeeping procedures

REQUIRED SKILLS

The individual needs to demonstrate the following skills:

- Observation of safety
- Interpreting working drawings
- Plasma welding, specification procedure , cutting techniques
- Laser beam welding, specification procedure and cutting techniques
- Manipulation of plasma spray
- Product assessment
- Workplace housekeeping procedures

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Observed safety and health as per Workplace procedures and OSHA 1.2 Selected materials, tools and equipment 1.3 Set up plasma welding and cutting equipment in accordance with job specifications 1.4 Set up laser beam welding and cutting equipment in accordance with job specifications 1.5 Weld and cut workpieces using plasma process as per job specifications and 1.6 Weld and cut workpieces using laser beam process as per job specifications 1.7 Weld workpieces are examined as per job specification
2. Resource Implications	The following resources must be provided: 2.1 Fully equipped welding workshop meeting OSHA standards 2.2 Plasma welding and cutting equipment 2.3 Laser beam welding and cutting equipment 2.4 Personal Protective Equipment
3. Methods of assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written tests 3.4 Projects
4. Context of Assessment	Candidate will be assessed 4.1 On job 4.2 Off job 4.3 Industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.