



Australian Government

MEM05063 Write and proof robotic welding system programs

Release: 1

MEM05063 Write and proof robotic welding system programs

Modification History

Release 1. New Unit.

Application

This unit of competency was developed for post trade engineering fabrication training and the recognition of post trade skills in planning and writing programs for robotic welding operations.

It defines the skills and knowledge required to plan and write programs in accordance with the manufacturer's operating procedures, using manufacturer specific language and the functional parameters of the welding robot as defined in the unit in conjunction with its prerequisites.

The unit scope includes writing, proofing and making necessary adjustments to programs using offline programming software and teach pendants.

Where integration of the welding robot with other programmable equipment is required the unit MEM07040 Set multistage integrated processes must also be selected. Where welding to AS 1554 Structural Purpose (SP) level or equivalent is to be programmed, then either the unit MEM05073 Perform advanced welding using gas metal arc welding, or MEM05020 Perform advanced welding using gas tungsten arc welding process, and their prerequisites must be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

MEM05050 Perform routine gas metal arc welding

MEM05052 Apply safe welding practices

MEM05085 Select welding processes

MEM09002 Interpret technical drawing

MEM11011 Undertake manual handling

MEM12023 Perform engineering measurements

MEM12024 Perform computations

MEM13015 Work safely and effectively in manufacturing and engineering

MEM14006 Plan work activities

MEM16006 Organise and communicate information

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

Plus either

MEM05017 Weld using gas metal arc welding process

MEM05050 Perform routine gas metal arc welding

or

MEM05049 Perform routine gas tungsten arc welding

MEM05092 Weld using gas tungsten arc welding process

Band: B

Unit Weight: 6

Competency Field

Fabrication

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Determine welding requirements	1.1 Identify welding requirements including relevant standards and codes from drawings, specifications and other customer and enterprise documentation 1.2 Check material to be welded is to specifications and job requirement 1.3 Identify requirements for any test pieces for non-destructive testing (NDT), sample pieces and production plates in accordance with specifications and standard operating procedures (SOPs)
2. Confirm welding robot suitability for job requirements	2.1 Identify welding robot features and specifications including robot language and welding process and parameter capabilities 2.2 Identify welding robot safety features 2.3 Establish required torch path geometry and robot operations using drawings and welding robot operating features 2.4 Confirm required operations for robot arm and torch using appropriate technical reference sources
3. Prepare for welding robot programming	3.1 Check alignment of selected torch to robot 3.2 Create torch centre point and check location and alignment 3.3 Review robot file library for correct references to weld size and weld type 3.4 Check availability of logical subroutines and other standard instructions for position orientation 3.5 Check job for any positions or welds requiring non-standard instructions

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
4. Write or record program	4.1 Write joint arm and welding moves using teach pendant or software 4.2 Perform any additional programming required including instructions, weld data recording and lower-level programming 4.3 Produce operation sheets to specification in accordance with SOPs
5. Trial program	5.1 Trial program on test material 5.2 Verify trial welds and program performance against required specifications 5.3 Edit program to adjust welding operations based on trial outcomes 5.4 Save final program and complete operation sheets and any required records according to enterprise procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Standards and codes include Australian or international standards and codes covering:	- welding processes - welding consumables - materials used in fabrication related projects or products - destructive and non-destructive testing of welds - qualifying of welders, welding inspectors and welding supervisors.
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Welding robot features and specifications include one or more of the following:	• components • capabilities • speed • reach • accuracy/repeatability • classification • home position • polar coordinate • cartesian coordinate • jointed elbow • movements • base • shoulder • elbow • pitch • roll • yaw • applications • required operating conditions • limitations • justification • safety features
Welding parameters for welding robot include one or more of the following:	• material preparation • joint detail • position • run sequence and pass number • welding process • filler material • flux • current • voltage • polarity • wire feed speed where relevant • travel speed.
Lower level programming:	• lower-level programming is where the programmer creates complex instructions and data types for functions that go beyond those supplied with the standard welding robot software.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>