



Australian Government

MEM05066 Develop and maintain welding procedures

Release: 1

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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 engineering fabrication skills in developing welding procedure specifications (WPS) to support welding operations undertaken to meet Australian and international welding standards and codes or where welding to a WPS is mandated as part of the work requirement.

The unit scope includes the required underpinning welding and metallurgical skills and knowledge of relevant welding standards, welding terminology and welder qualification requirements as defined in the unit in conjunction with its prerequisites.

The unit is intended to apply in occupations such as welding supervisors, welding engineers, welding inspectors and professional and technical employees that require a detailed knowledge of how WPSs are developed and maintained.

Where the conduct of non-destructive testing (NDT) is required, relevant NDT units must also be selected.

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

Band: B

Unit weight: 6

Pre-requisite Unit

MEM05061 Apply basic metallurgy principles to welding applications

MEM05078 Apply welding principles

MEM05085 Select welding processes

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

Plus one or more of the following units and their prerequisites:

MEM05060 Perform welds to code standards using submerged arc welding process
MEM05079 Perform welds to code standards using flux core arc welding process
MEM05080 Perform welds to code standards using gas metal arc welding process
MEM05081 Perform welds to code standards using gas tungsten arc welding process
MEM05082 Perform pipe welds to code standards using manual metal arc welding process
MEM05083 Perform welds to code standards using manual metal arc welding process
MEM05088 Perform welds to code standards using oxy fuel gas welding process

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. Interpret customer requirements	1.1 Identify welding and fabrication requirements from drawings, specifications and other documentation 1.2 Determine implications for required welding and testing from specified codes and standards 1.3 Identify joint design and welding parameter specifications required by WPS 1.4 Identify issues where requests for further information (RFIs) are required and communicate them to the customer 1.5 Record any resultant changes to welding, fabrication and quality specifications
2. Develop a preliminary WPS	2.1 List or produce sketches of required joints for inclusion in WPS 2.2 Develop preliminary welding procedure specification based on the design, specified standards and any customer additional requirements 2.3 Assess availability and appropriateness of pre-approved procedure qualification records (PQRs), WPSs and consumables 2.4 Determine number and type of test pieces required 2.5 Supervise welding of test pieces against preliminary WPS 2.6 Organise testing of test welds by an accredited testing agency or

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Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	verify results of previous testing procedures, where allowed under relevant standards or codes and customer specification
3. Establish final welding procedure	3.1 Interpret destructive and non-destructive testing (NDT) reports 3.2 Document test results and the procedures for creating and testing sample welds in a PQR 3.3 Adjust preliminary WPS as necessary and document final WPS based on outcomes 3.4 Obtain approval of WPS according to requirements of relevant standards and/or codes, regulations and customer 3.5 Record WPS in accordance with enterprise standard and code requirements
4. Maintain WPS	4.1 Liaise with fabricator on use of WPS in production 4.2 Review results of testing of production test pieces and other weld tests 4.3 Adjust WPS based on review 4.4 Obtain approval of any adjustments to WPS according to requirements of relevant standards and/or codes, regulations and customer 4.5 Record adjustments to WPS according to enterprise and standard and code requirements

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.

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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.
Non-destructive test reports include one or more of the following:	• dye penetrant • magnetic particle • radiographic • ultrasound.
Welding procedure qualification record (PQR)	the PQR is used as the basis for developing WPS. It is usually not job specific or customer specific although different organisations may use different formats providing the required information is included. The PQR must include: • the measured parameters used in producing the test weld • all relevant destructive and NDT tests and their outcomes of those tests or a reference to other documents that record the results • details of the approval of the PQR by an appropriate person.
Welding procedure specification (WPS) format includes one or more of the following:	• electronic • paper based.
Welding procedure parameters include one or more of the following:	• material specification and grade • material preparation • joint details • position • run sequence and pass number • welding process • filler material • material diameter • current • voltage • polarity • wire feed speed where relevant • travel speed • pre and post-heat input where required.

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>