

Demonstrate knowledge of welding technology

Level 5

Credits 20

Purpose People credited with this unit standard are able to demonstrate knowledge of the physics of welding, and of welding and cutting processes.

Subfield Mechanical Engineering

Domain Welding

Status Registered

Status date 4 April 2001

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Entry information Open.

Accreditation Evaluation of documentation and visit by NZQA and industry.

Standard setting body (SSB) Competenz

Accreditation and Moderation Action Plan (AMAP) reference 0013

This AMAP can be accessed at <http://www.nzqa.govt.nz/site/framework/search.html>.

Special notes

- 1 This unit standard is for people seeking the *International Welding Specialist* qualification from the International Institute of Welding (IIW). Details are available from the Heavy Engineering Research Association, P O Box 76 134, Manukau City.
- 2 Industry standards/codes relevant to this unit standard include (but are not limited to):
 - a AS/NZS 1554.1:2004, *Structural steel welding – Welding of steel structures*.
 - b *The 2004 ASME Boiler and Pressure Vessel Code*.
 - c ISO 15607:2003, *Specification and qualification of welding procedures for metallic materials – General rules*.

Elements and performance criteria

Element 1

Demonstrate knowledge of the physics of welding.

Performance criteria

- 1.1 Energy sources are identified for welding.
Range electrical, chemical, mechanical.
- 1.2 The characteristics of the electric arc are defined for welding.
Range heat generation at cathode and anode, alternating and direct current, magnetic fields.
- 1.3 Power sources are identified according to process requirements.
Range static and dynamic characteristics, controls, rating and duty cycle, applications.

Element 2

Demonstrate knowledge of welding and cutting processes.

Range processes include – oxy-gas welding, gas tungsten arc welding, gas metal arc welding, flux cored arc welding, manual metal arc welding, submerged arc welding, plasma arc welding, cutting (arc, plasma arc, oxyfuel gas, laser).

Performance criteria

- 2.1 Advantages, limitations, and applications of processes are described.
- 2.2 Equipment for welding and cutting processes is described in terms of the requirements of each process.
Range cables, electrode holders, wire feeders, travel units, welding heads, jigs, fixtures, manipulators.
- 2.3 Welding and cutting consumables are identified by composition and specification to industry standards.
- 2.4 Welding and cutting processes are compared in terms of practicality and cost effectiveness.

Please note

Providers must be accredited by the Qualifications Authority, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.