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**ENGINEERING - ROBOTICS**  
**Operate robotic equipment in the  
manufacturing industry**

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<b>level:</b>	<b>3</b>
<b>credit:</b>	<b>6</b>
<b>planned review date:</b>	August 2004
<b>sub-field:</b>	Mechanical Engineering
<b>purpose:</b>	<p>This unit standard is for people who are currently working, or who intend to work, in the manufacturing industry using robotic equipment.</p> <p>People credited with this unit standard are able to: demonstrate knowledge of potential problems or hazards prior to start up and shut down; prepare for operation; start up and operate; perform quality control checks; and perform routine shut down procedures on robotic equipment.</p>
<b>entry information:</b>	<p>Prerequisites: Unit 2824, <i>Follow safe working practices on an engineering worksite</i>; Unit 2401, <i>Shut down and isolate machines and equipment</i> or demonstrate equivalent knowledge and skills.</p>
<b>accreditation option:</b>	Evaluation of documentation and visit by NZQA and industry.
<b>moderation option:</b>	A national moderation system of regional panels and assessor networks has been established by Competenz.
<b>special notes:</b>	<p>1 Definitions</p> <p><i>Organisational procedures</i> refer to documents that include: worksite rules, codes, and practices; equipment operating instructions; documented quality management systems; and health and safety requirements.</p>

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*Robotic equipment* refers to: a reprogrammable multifunction manipulator designed to move material, parts, tools or specialised devices through variable programmed motions for the performance of a variety of tasks; *plus* a robotic controller unit; *plus* one or more of the following - hand-held control unit; pendant control unit, visual display unit; keyboard; mouse.

- 2 Legislation relevant to this unit standard includes but is not limited to the Health and Safety in Employment Act 1992, the Resource Management Act 1991, and their subsequent amendments.

## **Elements and Performance Criteria**

### **element 1**

Demonstrate knowledge of potential problems or hazards prior to start up and shut down of robotic equipment.

### **performance criteria**

- 1.1 Potential problems or hazards in start up of robotic equipment are described in terms of causes and likely effects.

Range: environment, maintenance, programming, sequence, position;  
evidence for a minimum of one of each is required.

- 1.2 Potential problems or hazards in shut down of robotic equipment are described in terms of causes and likely effects.

Range: environment, maintenance, programming, sequence, position;  
evidence for a minimum of one of each is required.

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**element 2**

Prepare for operation of robotic equipment.

**performance criteria**

- 2.1 Appropriate clothing is worn in a manner that protects personnel and complies with organisational procedures.
- 2.2 Work environment is free from obstacles and hazards.
- Range: personnel, equipment, raw material, processed product.
- 2.3 Potential problems with robotic equipment prior to start up are identified where possible and remedied if appropriate, or reported to authorised personnel in accordance with organisational procedures.
- 2.4 Product to be processed is confirmed as specified in the production schedule.

**element 3**

Start up and operate robotic equipment.

**performance criteria**

- 3.1 Start up of robotic equipment complies with organisational procedures.
- Range: start up position, orientation of equipment, raw material and/or processed product position.
- 3.2 Robotic equipment is operated in a manner consistent with organisational procedures.
- 3.3 Production requirements as advised in the production schedule are followed according to organisational procedures.

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- 3.4 Problems encountered during the operation of robotic equipment are identified and remedied if appropriate, or reported to authorised personnel in accordance with organisational procedures.
- 3.5 Emergency shut down procedures are complied with in accordance with organisational procedures.

**element 4**

Perform quality control checks on output from robotic equipment.

**performance criteria**

- 4.1 Interpretation of equipment feedback is made within a timeframe that minimises operation downtime, and maximises product output and quality.
- Range: feedback may include but is not limited to – robotic control unit, lights, alarms, visual display unit messages, auditory and visual observations.
- 4.2 Non-conforming variations in product output are identified, and corrective action is taken in accordance with organisational procedures.
- 4.3 Documentation relating to operation of robotic equipment is completed in accordance with organisational procedures.
- Range: documentation may include but is not limited to – Statistical Process Control charts, production schedules, cycle times, product counts; evidence of one is required.

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**element 5**

Perform routine shut down procedures on robotic equipment.

**performance criteria**

- 5.1 Shut down of robotic equipment complies with organisational procedures.
- Range: shut down position, orientation of equipment, product cycle complete.
- 5.2 Problems encountered during the shut down of robotic equipment are identified and remedied if appropriate, or reported to authorised personnel in accordance with organisational procedures.
- 5.3 Disposal of any waste material resulting from production is in accordance with organisational procedures and legislative requirements.
- 5.4 Work environment is free from hazards and obstacles in preparation for subsequent operations.

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**Comments on this unit standard**

Please contact the Competenz [j.broadhead@competenz.org.nz](mailto:j.broadhead@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.

**Please Note**

Providers must be accredited by the Qualifications Authority or a delegated inter-institutional body before they can register 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.

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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 providers wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is covered by AMAP 0013 which can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.