



Australian Government

Department of Education, Employment and Workplace Relations

MSAPMOPS601A Design equipment and system modifications

Revision Number: 1

MSAPMOPS601A Design equipment and system modifications

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the skills and knowledge needed to design equipment and system modifications in a manufacturing situation. This unit is typically performed by high level staff, working as part of a design, development and implementation team and taking a lead technical role. It does not include the design of equipment requiring specialist engineering skills or regulatory licensing, although it may include working with a person with these skills/licence.
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Application of the Unit

Application of the unit	This competency applies to people who design modifications to equipment or systems, typically used for production. The modification may be to improve productivity, improve reliability, reduce waste (muda), reduce cost or other reasons. The competency can apply to the design of equipment/system modifications associated with product changes or improvements and/or establishment of a new production line/product. Typically it will be to meet a specified end use. This will involve working closely with a range of management and operations personnel and requires balancing the business, operational and technical sides of the modified equipment/system. This unit of competency applies to the technical expert. The competency is applied under limited guidance in line with a broad plan, budget or strategy This competency is typically performed by senior technologists working in liaison with other technical experts, operations management, operators and other relevant people with whom they would work as part of a (possibly ad hoc) team.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Assess requirements.	1.1. Establish modification or design requirement 1.2. Establish design concepts 1.3. Establish design limitations 1.4. Consult specialists/experts as required
2. Evaluate options.	2.1. Define options 2.2. Determine most appropriate modification 2.3. Confirm selected option with appropriate personnel in accordance with workplace procedures
3. Design modifications.	3.1. Design modification to meet end use specifications/standards and all legislative or regulatory requirements 3.2. Verify design in accordance with enterprise procedures
4. Coordinate design implementation and testing.	4.1. Coordinate implementation of the design/modification 4.2. Assess design outcome test results to establish conformance to requirements 4.3. Assess variations to the design where necessary 4.4. Prepare documentation to meet all requirements
5. Maintain records	5.1. Maintained records of design and modification outcomes in accordance with enterprise procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills may include (but may not be restricted to):

- interpret design requirements
- apply technical skills, including performing technical calculations
- conduct tests and prepare drawings/documentation
- evaluate design options
- communicate effectively within the workplace, including liaising with other departments
- establish or interpret procedures, where required
- determine report requirements and present information in appropriate formats

Required knowledge

Required knowledge, to the breadth and depth required to design equipment and system modifications may include (but may not be restricted to):

- appropriate design techniques
- relevant Australian design standards
- OHS considerations and environmental factors in relation to equipment/system design
- safety and environmental aspects of relevant enterprise activities
- workplace procedures and reporting/recording processes
- relevant regulatory requirements and codes of practice.

Evidence Guide

EVIDENCE GUIDE	
The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessment for this unit of competency will be in a work environment or a simulated work environment. Assessment must confirm appropriate knowledge and skills to: • establish design/modification requirements • assess design and modification options • organise implementation of design/modification • ensure work meets specifications • apply workplace health and safety policies in work operations • maintain accurate records
Context of and specific resources for assessment	Assessment may occur on the job or in an appropriately simulated environment. This requires access to real or appropriately simulated situations involving the design of equipment and system modifications for applications within a manufacturing context. This includes real or simulated work areas, materials, equipment, and information on work specifications, manufacturer's instructions, relevant safety procedures and regulations, quality standards, organisation procedures and customer requirements.
Method of assessment	
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Procedures

Procedures may be written, verbal, computer-based or in some other form. They include:

- all work instructions
- standard operating procedures
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant

For the purposes of this Training Package, 'procedures' also includes good operating practice as may be defined by industry codes of practice (e.g. Responsible Care) and government regulations

All work will comply with procedures

Modification/design requirements

Modification/design requirements may include (but is not restricted to) the following factors:

- production,
- facility,
- OHS
- sustainability

Design concepts

Design concepts may include (but are not restricted to) the following requirements:

- process,
- material,
- quantity,
- cost and
- outcome

RANGE STATEMENT	
Design limitations	Design limitations may be determined from (but are not restricted to) the following as applicable: • codes, • regulations and • technical documentation
Design	Design activities relate to processes which are based on established principles and practices, and that require modifications determined by experience and analysis Activities may involve (but are not limited to): • design research and consultation with internal or external specialists • assessment and evaluation of design concepts • design implementation and testing of modifications
Applicable regulations and legislation	Applicable regulations and legislation may include (but are not limited to): • occupational health and safety legislation and regulation relevant to workplace activities • relevant Australian design standards • workers' compensation legislation and regulation • environmental legislation and regulations • industry codes of practice • Australian (or other) Standards
Appropriate action	Appropriate action includes: • determining problems needing action • determining possible fault causes • rectifying problem using appropriate solution within area of responsibility • following through items initiated until final resolution has occurred • reporting problems outside area of responsibility to designated person
Health, safety and environment (HSE)	All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state, territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict

RANGE STATEMENT

	between Performance Criteria and HSE requirements, the HSE requirements take precedence
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Unit Sector(s)

Unit sector	Operational/technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		