Australian Government

# UEENEEE162A Select drive components for electrical equipment design

**Release 2**

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

# UEENEEE162A Select drive components for electrical equipment design

## Modification History

Not applicable.

## Unit Descriptor

**Unit Descriptor** **1) Scope:**

**1.1) Descriptor**

This unit covers the selection of drive components based on design concepts for the operation of plant and electrical equipment. It encompasses working safely, applying extensive knowledge of drive component operation and characteristics, their application, gathering and analysing data, applying problem solving techniques, developing and documenting solutions and alternatives.

Note.

Typical drive components are those encountered in meeting performance requirements and compliance standards, revising a machine operating parameters and dealing with machine malfunctions.

## Application of the Unit

**Application of the Unit** **2)**

This unit is intended to apply to any recognised development program that leads to the acquisition of a formal award at AQF level 6 or higher.

## Licensing/Regulatory Information

**License to practice** **3)**

The skills and knowledge described in this unit do not require a license to practice in the workplace. However,

**License to practice** **3)**

practice in this unit is subject to regulations directly related to occupational health and safety, codes of work practice and standard work procedures related to the operation of automated machinery.

# Pre-Requisites

**Prerequisite Unit(s)** **4)**

**Competencies** **4.1)**

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

| | |
|---|---|
| UEENEEE101A | Apply Occupational Health and Safety regulations, codes and practices in the workplace |
| UEENEEE161A | Analyse static and dynamic parameters of electrical equipment |

**Literacy and numeracy skills** **4.2)**

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 5 Writing 5 Numeracy 5

# Employability Skills Information

**Employability Skills** **5)**

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability

| | |
|---|---|
| **Employability Skills** | **5)** Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements. |

## Elements and Performance Criteria Pre-Content

| | |
|---|---|
| **6)** Elements describe the essential outcomes of a competency standard unit | Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide. |

## Elements and Performance Criteria

| ELEMENT | PERFORMANCE CRITERIA | |
|---|---|---|
| 1 Prepare to select drive components. | 1.1 | OHS processes and procedures for a given work area are identified, obtained and understood. |
| | 1.2 | Established OHS risk control measures and procedures in preparation for the work are followed. |
| | 1.3 | The extent of the drive selection is determined from performance specifications and situation reports and in consultation with relevant persons. |
| | 1.4 | Activities are planned to meet scheduled timelines in consultation with others involved in the work. |
| | 1.5 | Strategies are identified to ensure efficient development and implementation of solution(s). |
| 2 Select drive components | 2.1 | OHS risk control measures and procedures for carrying out the work are followed. |
| | 2.2 | Knowledge of drive components is applied to engineering design concepts. |
| | 2.3 | Parameters, specifications and performance requirements in relation to drive components are established in accordance with established |

| ELEMENT | PERFORMANCE CRITERIA | |
|---|---|---|
| | | procedures. |
| | 2.4 | Drive components are selected to provide the most effective solution(s). |
| | 2.5 | Unplanned events are dealt with safely and effectively and consistent with regulatory requirements and enterprise policy. |
| | 2.6 | Quality of work is monitored against personal performance agreement and/or established organizational or professional standards. |
| 3 Document and report the results of the selection of drive components relative to engineering design concepts. | 3.1 | Selection of drive components is tested to determine their effectiveness and modified where necessary. |
| | 3.2 | Selection is documented including details of all findings, calculations and assumptions. |
| | 3.3 | Selection is reported to appropriate personnel to establish action to be taken based on findings. |
| | 3.4 | Justification for selection and any actions to be undertaken in relation to the equipment is documented for inclusion in work/project or development records in accordance with professional standards. |

# Required Skills and Knowledge

## REQUIRED SKILLS AND KNOWLEDGE

**8)** This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and selecting drive components for equipment design.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

**KS01-EE162A Mechanical drives engineering**

Evidence shall show an understanding of mechanical drive components and engineering design concepts to an extent indicated by the following aspects:

T1 Function of common mechanical drive parts and components

T2 Australian Standards governing the design of parts and components in a drive system

T3 Selection criteria for a part or component or drive system to suit a particular application

T4 Design philosophy applicable to mechanical, civil and electrical engineering

T5 Essential features of a design specification

T6 Understanding of Australian Standards and Codes of practice for design

T7 Steps in a designing a design

T8 Ergonomics in design

# Evidence Guide

## EVIDENCE GUIDE

**9)** The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

**Overview of Assessment** **9.1)**

Longitudinal competency development approaches to assessment,

such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

**Critical aspects of evidence required to demonstrate competency in this unit**

**9.2)**

Before the critical aspects of evidence are considered all prerequisites must be met.

Evidence for competence in this unit shall be considered holistically. Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
  - Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement
  - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
  - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
  - Demonstrate an appropriate level of skills enabling employment
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Selecting drive components for equipment design as described in 8) and including:

A Understanding drive components relative to engineering design concepts.

B Forming effective strategies for selecting drive components.

C Obtaining drive component parameters, specifications and performance requirements appropriate to each situation.

D Testing the results of the selection.

E Documenting instruction for implementing any actions resulting from the selection that incorporates risk control measure to be followed.

F Documenting justification of actions to be implemented in accordance with professional standards.

G Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items.

Note:
Successful completion of relevant vendor training may be used

to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

**Context of and specific resources for assessment**

**9.3)**

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed in this unit.

These should be used in the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions for assessment must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to selecting drive components for equipment design.

**Method of assessment**

**9.4)**

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

**Concurrent assessment and relationship with other units** **9.5)**

For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:

UEENEEE16 3A Analyse materials for suitability in equipment

# Range Statement

**RANGE STATEMENT**

**10)** This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to selection of two different types of drive components.

Note.

Typical drive components are those encountered in meeting performance requirements and compliance standards, revising a machine operating parameters and dealing with mechanical drive malfunctions.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

# Unit Sector(s)

Not applicable.

# Competency Field

**Competency Field** **11)**

Electrotechnology