



Australian Government

**UEENEEG126A Install and maintain field
power and distribution systems with a low
voltage demand up to 200 A per phase**

Release: 2

UEENEEG126A Install and maintain field power and distribution systems with a low voltage demand up to 200 A per phase

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit covers the installation and maintenance of electrical field power and distribution systems intended to operate at voltages to 1,000 V a.c. or 1,500 V d.c. It encompasses working safely and to standards, positioning site generator sets, routing cables to specified locations, matching equipment with that specified for a given location terminating cables and connecting accessories and completing the necessary installation documentation.

Application of the Unit

Application of the Unit 2)

This unit is intended to augment previously acquired competencies. It is suitable for employment-based programs under an approved contract of training.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit do not require a license to practice in the work place. However practice in this unit is subject to regulations directly related to occupational health and safe and contracts of training such as new apprenticeships.

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.

UEENEEE101 A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEE102 A	Fabricate, dismantle, assemble of utilities components
UEENEEE104 A	Solve problems in d.c circuits
UEENEEE105 A	Fix and secure electrotechnology equipment
UEENEEE107 A	Use drawings, diagrams, schedules, standards, codes and specifications
UEENEEG006 A	Solve problems in single and three phase low voltage machines
UEENEEG033 A	Solve problems in single and three phase electrical apparatus and circuits
UEENEEG063 A	Arrange circuits, control and protection for general electrical installations
UEENEEG101 A	Solve problems in electromagnetic devices and related circuits
UEENEEG102 A	Solve problems in low voltage a.c. circuit
UEENEEG106 A	Terminate cables, cords and accessories for low voltage circuits
UEENEEG107 A	Select wiring systems and cables for low voltage general electrical installations
UEENEEG108 A	Trouble-shoot and repair faults in low voltage electrical apparatus and circuits

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 4 Writing 4 Numeracy 4

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 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 install and maintain field power and distribution systems. | 1.1 OHS 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 |

ELEMENT

PERFORMANCE CRITERIA

- followed.
- 1.3 Safety hazards that have not previously been identified are noted and established risk control measures are implemented.
 - 1.4 Nature of the work and location of power equipment is determined by site inspection and from job instructions, specifications and/or diagrams.
 - 1.5 Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved on the work site.
 - 1.6 Materials needed for the installation, maintenance/repair work are obtained in accordance with established procedures and checked against job requirements.
 - 1.7 Tools, equipment and testing devices needed to install or maintain/repair power supplies are obtained in accordance with established procedures and checked for correct operation and safety.
- 2 Install field power and distribution systems.
- 2.1 OHS risk control measures and procedures for carrying out the work are followed.
 - 2.2 Generator set are located and installed to comply with technical standards and job specifications and requirements.
 - 2.3 Cable sets are selected to comply with load requirements and voltage drop limitations.
 - 2.4 Cable sets are installed terminated to comply with technical standards and job specifications and requirements.
 - 2.5 Tests are conducted to ensure installed power supply complies with specifications and functions as intended.
 - 2.6 Established methods for dealing with unexpected situations are discussed with appropriate person or persons and documented.

ELEMENT	PERFORMANCE CRITERIA
	2.7 Installation of power supply is carried out efficiently without unnecessary waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices.
3 Maintain/repair field power and distribution systems.	3.1 OHS risk control measures and procedures for carrying out the work are followed.
	3.2 Correct functioning of equipment is established from reference to manuals, system specifications and commissioning data.
	3.3 Faults are identified by reference to appropriate technical information and applying knowledge of field power and distribution systems to logical fault finding techniques.
	3.4 Faulty, worn, damaged or insecure components are replaced, repaired or secured in accordance with manufacturer's specifications and enterprise requirements.
	3.5 Tests are conducted to ensure maintained/repared power and distribution system complies with specifications and functions as intended.
	3.6 Established methods for dealing with unexpected situations are discussed with appropriate person or persons and documented.
	3.7 Maintenance and repair of power and distribution system is carried out efficiently without unnecessary waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices.
4 Complete installation and maintenance of field power and distribution systems.	4.1 OHS work completion risk control measures and procedures are followed.
	4.2 Work site is cleaned and made safe in accordance with established procedures.

ELEMENT

PERFORMANCE CRITERIA

- 4.3 Work completion is documented and an appropriate person or persons notified in accordance with established procedures.

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 installing and maintaining field power and distribution systems with a LV demand up to 200 A per phase.

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

KS01-EG126A

Field power and distribution systems

Evidence shall show an understanding of installing and maintaining field power and distribution systems with a low voltage demand up to 200 amps per phase to an extent indicated by the following aspects:

T1 Single phase alternators encompassing:

- Purpose, types and applications
- Operating principles and characteristics
- Installation and starting/running requirements and limitations
- Connection arrangements
- Typical fault symptoms and related conditions

T2 Three phase alternators encompassing:

- Purpose, types and applications
- Operating principles and characteristics
- Installation and starting/running requirements and limitations
- Connection arrangements
- Typical fault symptoms and related conditions

T3 Field power and distribution systems encompassing:

- Types applications and components
- Regulator and safety requirements and standard
- Equipment installation and commissioning
- Testing requirements

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 this 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's 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 every day 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 shall 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, policies and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - Install and maintain field power and distribution systems with a LV demand up to 200 A per phase as described in 8) and including:
 - A Interpreting specifications and circuit diagrams correctly.
 - B Maintaining, repairing and installing power and distribution systems correctly.

- C Using appropriate diagnostic and fault finding techniques.
- D Following relevant codes of practice, procedures and requirements.
- E Completing relevant records and documentation.
- F Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the 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 by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions 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 installing and maintaining field power and distribution systems with a LV demand up to 200 A per phase.

**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 assessment 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)**

Nil

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 installing and maintaining at least two field power and distribution systems with a LV demand up to 200 A per phase. The installation shall comprise a generator set, main switchboard, earthing system, at least one distribution board, flexible cable/plug sets, final sub circuits supplying lighting and power. One installation is to include a three phase load.

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)

Electrical