



Australian Government

Department of Education, Employment and Workplace Relations

UEPMNT417B Inspect electrical generators and diagnose faults

Release: 1

UEPMNT417B Inspect electrical generators and diagnose faults

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit deals with the skills and knowledge required to conduct inspections and diagnose faults in electrical generating sets.

Application of the Unit

Application of the Unit 2)

This unit is intended to augment formally acquired competencies.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit do not require a licence to practise in the workplace. However, practice in this unit is subject to regulations directly related to occupational health and safety.

Pre-Requisites

Prerequisite Unit(s) 4)

Competencies 4.1)

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

Prerequisite Unit(s)**4)**

confirmed.

Where pre-requisite pathways have been identified. All competencies in the Common Unit Group must have been completed.

Common Unit Group

Unit Code	Unit Title
UEPMNT351B	Test and commission electrical equipment
UEENEEG108A	Trouble-shoot and repair faults in low voltage electrical apparatus and circuits
UEENEEE101A	Apply Occupational Health Safety regulations, codes and practices in the workplace
UEENEEE102A	Fabricate, dismantle, assemble of utilities industry components
UEENEEE104A	Solve problems in d.c. circuits
UEENEEE105A	Fix and secure electrotechnology equipment
UEENEEE107A	Use drawings, diagrams, schedules, standards, cords and specifications
UEENEEG006A	Solve problems in single and three phase low voltage machines
UEENEEG033A	Solve problems in single and three phase low voltage electrical apparatus and circuits
UEENEEG063A	Arrange circuits, control and protection for general electrical installations
UEENEEG101A	Solve problems in electromagnetic devices and related circuits
UEENEEG102A	Solve problems in low voltage a.c. circuits
UEENEEG106A	Terminate cables, cords and

Prerequisite Unit(s) 4)

accessories for low voltage circuits

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve this unit if they have reading, writing and numeracy skills indicated by the following levels. A description of what each level entails is provided in Section 2.3.1 Language, Literacy and Numeracy.

Reading 4 Writing 4 Numeracy 4

Employability Skills Information**Employability Skills 5)**

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 Plan and prepare for the work | 1.1 Maintenance and operating history is obtained |
| | 1.2 Occupational Health and Safety standards, statutory requirements, relevant Australian standards, codes of practice, manufacturers' |

ELEMENT	PERFORMANCE CRITERIA
	specifications and enterprise procedures are identified, applied and monitored throughout the inspection procedure
	1.3 The inspection is planned in detail including sequencing, prioritising and considerations are made where appropriate of relevant technical and engineering procedures.
	1.4 Resources required to satisfy the plan are identified, obtained and inspected for compliance with the job specifications
	1.5 Relevant plans, drawings and texts are selected and interpreted in accordance with the plan
	1.6 Co-ordination requirements, including requests for isolations where appropriate, are resolved with others involved, affected or required by the work
	1.7 Potential hazards are identified and prevention and/or control measures are selected in accordance with the inspection plan and site procedures
	1.8 Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training
2 Carry out generator inspection	2.1 Required isolations are confirmed where appropriate in accordance with site requirements
	2.2 Generator is inspected using appropriate manuals, drawings and texts in accordance with the plan
	2.3 Generator is inspected in conjunction with others involved in, or affected by, the inspection plan
	2.4 Any needs for additional tests/inspections required are defined
	2.5 Inspection is carried out and permits relinquished in accordance with the plan

ELEMENT		PERFORMANCE CRITERIA	
3	Evaluate/analyse inspection results	3.1	Test/inspection results and data are analysed
		3.2	Conclusions drawn with reference to potential options
		3.3	Specialist assistance is sought when required
4	Prepare remedial action plan	4.1	Action plan is prepared for any required remedial action
		4.2	Remedial action is followed up and checked for effectiveness
5	Update documentation	5.1	All relevant records and documentation are updated in accordance with statutory, industry and enterprise requirements

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 inspecting electrical generators and diagnosing faults.

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

The extent of the Essential Knowledge and Associated Skills required follows:

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T1 Evidence shall show that knowledge has been acquired for safe working practices of:

- Relevant Environmental, Occupational Health and Safety legislation and regulations
- Relevant plant and equipment, its location and operation
- Technical drawings and manufacturers manuals
- Introduction to and typical arrangements of power production plant
- Relevant state and territory regulations
- Relevant Australian standards
- Isolation procedures
- Generator types and characteristics
- Generator support systems
- Regulatory procedures
- Engineering and workshop practice

T2 Specific skills needed to achieve the Performance Criteria:

- Apply Relevant Environmental, Occupational Health and Safety legislation and regulations
- Interpret Technical drawings and manufacturers manuals
- Apply relevant state and territory regulations
- Apply relevant Australian standards
- Use inspection procedures
- Apply data analysis techniques and tools
- Communicate effectively.

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the competency standard unit and must be read in conjunction with the Performance Criteria and the Range Statement of unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this competency standard unit and shall be used in conjunction with all components parts of this unit and, performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment

9.1)

Longitude 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 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 accord 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. Hence, sources of evidence need to be 'rich' in nature so as 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 practiced. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included 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 pre-requisites 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 – UEP12”. 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 6) of this unit
 - Demonstrate an appropriate level of employability skills
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
- Demonstrated performance across a representative range of contexts from the prescribed items below:
 - Preparation and planning of work
 - Inspection techniques and procedures
 - Working in a confined space
 - Analyse inspection results and make recommendations

**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.

Competency Standards should be assessed in the workplace or simulated workplace and under the normal range of workplace conditions.

Assessment of this unit will be supported with documentary evidence, by means of endorsement stating type and application of work.

In addition to the resources listed above in Context of assessment', evidence should show competency working, in limited spaces, with different types of plant and equipment as well as different structural/construction types and methods and in a variety of environments.

Method of assessment

9.4)

This unit shall be assessed by methods given in 1.3.00 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)

There are no recommended concurrent assessments with this unit, however in some cases efficiencies may be gained in terms of learning and assessment effort being concurrently managed with allied competency standard units where listed.

UEPMNT421B	Conduct technical inspection of process plant and equipment.
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Range Statement

RANGE STATEMENT

10) This relates to the competency standard 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.

Details of inspection may be clarified by diagnosis of operational information.

Inspection may include windings, end windings and connections, slot wedges, insulation, end bell, excitation systems, automatic voltage regulator and cooling system.

Inspection completion details may include plant and maintenance records, job cards, check sheets and on device labelling updates.

Work site environment may be affected by nearby plant or processes, e.g. heat, noise, dust, oil, water and chemical.

Isolations can refer to electrical/mechanical or other associated processes.

Tests may include visual and sensory, sampling, tensioning and leak testing.

Faults identified may include movement of conductors, leaks in stator cooling systems, movement of connections and build up of foreign matter.

Appropriate personnel for consultation may include supervisor/team leader or equivalent, technical and engineering officers or equivalent, maintenance staff, power plant operations personnel and external specialist personnel.

Generic terms are used throughout this Training Package for vocational standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms are given in Section 2.1 Preliminary Information and Glossaries.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field **11)**

Maintenance.