Australian Government

Department of Education, Employment and Workplace Relations

UEENEEK049A Verify compliance and functionality of a renewable energy installation

Release: 1

UEENEEK049A Verify compliance and functionality of a renewable energy installation

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor **1**)

1.1) **Descriptor**

This competency standard unit covers inspection and testing to verify whether a Stand-alone Power System is safe and complies with all requirements. It encompasses working safely, visual inspections and mandatory, optional and functional test procedures, identifying non-compliance defects and mandatory reporting requirements.

Application of the Unit

Application of the Unit **4**)

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

Licensing/Regulatory Information

1.2) License to practice

The skills and knowledge described in this unit do NOT require a licence to practice in the workplace at ELV levels, subject to regulations for undertaking of electrical work. Practice in workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships and the like.
Note:
Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control, lifting equipment and the like. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus, site rehabilitation and the like.
Compliance may be required in various jurisdictions relating to currency in first aid, confined space, lifting, risk safety measure and the like.

Pre-Requisites

Prerequisite Unit(s) **2)**

2.1) Competencies

Granting of competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed:
UEENEEE001B Apply OHS practices in the workplace
UEENEEE002B Dismantle, assemble and fabricate electrotechnology components
UEENEEE003B Solve problems in extra-low voltage single path circuits
UEENEEE004B Solve problems in multiple path d.c. circuits
UEENEEE005B Fix and secure equipment
UEENEEE007B Use drawings, diagrams, schedules and manuals
UEENEEE008B Lay wiring and terminate accessories for extra-low voltage circuits
UEENEEE019C Solve problems in single phase low voltage circuits

Prerequisite Unit(s) **2)**

UEENEEE034B Document occupational hazards and risks in electronics
UEENEEG001B Solve problems in electromagnetic circuits
UEENEEK023B Carry out basic repairs to renewable energy apparatus by replacement of components
UEENEEK027B Diagnose faults in renewable energy control system
UEENEEK028B Solve problems in stand-alone power systems
UEENEEK034B Install stand-alone photovoltaic power systems

For the full prerequisite chain details for this unit please refer to Table 2 in Volume 1, Part 2

Employability Skills Information

Employability Skills **3)**

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 unit of competency	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 inspect and test an RE installation.	1.1 OHS procedures for a given work area are obtained and understood.
	1.2 Established OHS risk control measures and procedures in preparation for the work are followed.
	1.3 Safety hazards, which have not previously been identified, are noted and established risk control measures are implemented.
	1.4 Documentation or deemed to comply standard on which installation is based is reviewed and understood.
	1.5 Appropriate personnel are consulted to ensure the work is co-ordinated effectively with others involved on the work site.
	1.6 Tools, equipment and testing devices needed to verify compliance are obtained in accordance with established procedures and checked for correct operation and safety.
	1.7 Preparatory work is checked to ensure no unnecessary damage has occurred and complies with requirements.
2 Visually inspect and conduct safety testing on the installation.	2.1 OHS risk control measures and procedures for carrying out the work are followed.
	2.2 The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures.
	2.3 Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.
	2.4 Wiring is checked for suitability for the environments in which they are installed and suitably protected from damage or overheating.
	2.5 Cable conductor sizes are acquired as meeting current-carrying capacity requirements and

ELEMENT	PERFORMANCE CRITERIA	
		voltage drop
	2.6	Protection methods and devices are validated as meeting co-ordination requirements for overload and short-circuit protection.
	2.7	Switchgear and control gear is validated as being appropriately rated and meeting functional requirements.
	2.8	Evidence that electrical equipment complies with safety requirements is cited.
	2.9	Earthing system components are checked that they are correctly located and conductors correctly sized.
	2.10	Marking on switchboards are checked for accuracy and clarity and comply with requirements.
	2.11	Visual inspection is conducted to ensure that the system complies with requirements.
	2.12	Testing is conducted to verify that circuit connections are correct; voltage drop is within limits; circuit protection operates as intended; polarities are correct; charging rates are compliant with specification
3 Report inspection and test findings.	3.1	OHS work completion risk control measures and procedures are followed.
	3.2	Work site is cleaned and made safe in accordance with established procedures.
	3.3	Non-compliance defects are identified and reported in accordance with established procedures
	3.4	Recommendations for rectifying defects are made in accordance with established procedures.
	3.5	Documentation is completed in accordance with established procedures.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Evidence must show that knowledge has been acquired of verifying compliance and functionality of renewable energy installations.
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 (EKAS) required is given in Volume 2 - Part 2.2 EKAS. It forms an integral part of this unit.

2.20.25 RE installations, ELV installation requirements

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit of competency and must be read in conjunction with the performance criteria and the range statement of the unit of competency 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)
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 all training agreements. 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 accord with Industry and, Regulatory policy in this regard.
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 for Assessors in the Assessment Guidelines of this Training Package.

EVIDENCE GUIDE

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.

The evidence on which competency in this unit is based shall be considered holistically for each element on at least two occasions comprising:

- 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; and
  - Apply sustainable energy principles and practices as specified in the performance criteria and range; and
  - 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. and
  - Demonstrate an appropriate level of skills enabling employment; and
  - Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures; and
- Demonstrated performance across a representative range of contexts from the prescribed items below:
  - Verify compliance and functionality of renewable energy installations as described as described in 8) and including:

    A Selecting correct tools and testing equipment.

    B Identifying visual non-compliance defects.

    C Using effective methods for conducting tests.

    D Identifying non-compliance from test results.

    E Identifying causes of non-compliance.

    F Completing mandatory reporting.

EVIDENCE GUIDE

G 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.

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 competency standard unit.

Resources required to assess this unit are listed above in Context of assessment', which should also be used in the formal learning/assessment environment.
Note:
Where simulation is considered a suitable strategy for assessment it must ensure that the conditions for assessment are authentic and as far as possible reproduce and replicate the workplace and is consistent with the approved industry simulation policy.

In addition to the resources listed above in Context of and specific resources for assessment, evidence should show demonstrated competency in verifying compliance and functionality of general electrical installations.

Method of assessment

9.4)
This competency standard 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 competency standard 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 concurrent assessment recommendations for this unit.

EVIDENCE GUIDE

The critical aspects of occupational health and safety covered in unit UEENEEE001B and other discipline specific occupational health and safety units shall be incorporated in relation to this unit.

Range Statement

RANGE STATEMENT

8) This relates to the unit of competency 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 competency standard unit shall be demonstrated in relation to verifying compliance and functionality of at least two electrical installations comprising a PV Array of at least 450 W, a battery bank, an inverter, a battery charger (or Inverter/Charger) and a generating set with reference to AS 4509, AS 4086 and AS/NZS 5033, AS 3010 including relevant sections of AS/NZS 3000.

Generic terms are used throughout this Vocational Standard shall be regarded as part of the Range of Variables 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

2.2) Literacy and numeracy skills

2.2) Literacy and numeracy skills

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

Reading	3	Writing	3	Maths	3

Competency Field

Competency Field **5)**

Renewable and Sustainable Energy