



Australian Government

**UEERE0036 Install small wind energy
conversion systems rated up to 10 kW for
ELV stand-alone applications**

Release: 1

UEERE0036 Install small wind energy conversion systems rated up to 10 kW for ELV stand-alone applications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to install small wind energy conversion systems (WECS) rated up to 10 kilowatt (kW) for extra-low voltage (ELV) stand-alone applications.

It includes preparing to install small ELV WECS, installing small ELV WECS, completing installation and reporting installation activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEERE0047 Solve problems in wind energy conversion systems rated up to 10 kW

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install small ELV WECS

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) processes and procedures for relevant work area are identified and applied in accordance with workplace procedures
- 1.2** WHS/OHS risks are identified and workplace procedures for risk control are applied in preparation for work
- 1.3** Risks/hazards are identified, assessed, reported to relevant person/s and control measures implemented
- 1.4** System installation is planned in consultation with others impacted by the work and sequenced appropriately
- 1.5** Nature and location of the work are determined from documentation or relevant person/s to determine the scope of work
- 1.6** Sitting limitations and customer system requirements are identified in consultation with the customer
- 1.7** Suitable system components are specified and selected in accordance with workplace procedures
- 1.8** Location of system components is planned within the constraints of the building structure and regulations
- 1.9** Instructions for coordinating work with others is obtained from relevant person/s and applied
- 1.10** Materials and components required are obtained in accordance with workplace procedures, pre-assembled, where necessary, and checked against job requirements
- 1.11** Materials and components are prepared for transport to the site and transport is arranged
- 1.12** Tools, equipment and testing devices required are obtained in accordance with workplace procedures and checked for correct operation and safety

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| | 1.13 | Preparatory work is checked to ensure no unnecessary damage has occurred previously and complies with requirements |
| 2 | Install small ELV WECS | |
| | 2.1 | Workplace risk control measures and procedures are applied |
| | 2.2 | Equipment is transported safely to the site in accordance with workplace procedures |
| | 2.3 | Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures |
| | 2.4 | Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures |
| | 2.5 | System components are installed in compliance with technical industry standards, job specifications and requirements, and with sufficient access to enable terminations, adjustment and maintenance |
| | 2.6 | Wiring is terminated at components and associated equipment in accordance with manufacturer specifications and functional and regulatory requirements |
| | 2.7 | Unexpected events are discussed with relevant person/s, dealt with and documented in accordance with workplace procedures |
| | 2.8 | Unexpected situations are dealt with safely and with the approval of authorised person/s |
| | 2.9 | Quality checks of installed apparatus are conducted in accordance with workplace procedures |
| | 2.10 | System installation is completed minimising waste of materials, damage to apparatus, circuits, the surrounding environment and services using sustainable energy principles |
| 3 | Complete installation and report installation activities | |
| | 3.1 | Workplace risk control measures and procedures are applied |
| | 3.2 | Worksite is cleaned and made safe in accordance with workplace procedures |

- 3.3 Final checks are conducted to confirm installed apparatus conforms to requirements
- 3.4 System operation is tested and installation verified as compliant with industry standards and work specifications
- 3.5 'As-installed' apparatus and associated equipment are documented and relevant person/s notified in accordance with workplace procedures
- 3.6 Customer is informed of system operation, routine maintenance and limitations
- 3.7 Documentation required by industry standards or job specifications is provided to the customer

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK143A Install small wind energy conversion systems rated up to 10 kW for ELV stand-alone applications.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEERE0036 Install small wind energy conversion systems rated up to 10 kW for ELV stand-alone applications

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- assessing customer energy requirements, efficiency improvements and site limitations
- reading and interpreting drawings related to and apparatus locations and circuit connections
- placing and securing system components accurately
- maintaining fire integrity
- connecting system extra-low voltage (ELV) components to comply with requirements
- testing system operation and verifying compliance with standards and job specifications
- completing necessary documentation, including handing over system operational documents to the customer
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including the use of risk control measures
- applying sustainable energy principles and practices
- checking isolation of circuits/machines/systems
- coordinating work with relevant person/s
- determining live testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- installing and setting up small wind energy conversion systems (WECS) for ELV stand-alone application for one mainstream type of small WECS.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- installation and maintenance of small ELV WECS, including:
 - installation of an ELV WECS encompassing:
 - selection of an appropriate tower for the installation of a WECS taking into consideration soil type and footings, local council approvals, appropriate codes,

- AS/NZS 1170.2 Structural design actions - Wind actions, and transport of tower
- appropriate methods and safety procedures for raising tower and WECS, lightning protection, tower maintenance, safety in the erection and maintenance of the tower and WECS, and site management to minimise environmental impacts
- appropriate electrical transmission voltage and cable size from the WECS to the load or energy storage
- appropriate installation, commissioning, fault diagnosis and rectification using appropriate safety procedures, including WECS power output, voltage regulation, and transmission cable voltage drop, manual and automatic furling, and shutdown
- schematic and wiring diagrams for the WECS showing the general circuit layout and protection between the WECS, energy storage, inverter and loads according to AS/NZS 3000 Electrical installation (known as the Australian/New Zealand Wiring Rules), AS/NZS 4509 Stand-alone power systems, and lightning protection requirements
- suitable layout for the location of energy storage to meet AS/NZS 3000 Electrical installation (known as the Australian/New Zealand Wiring Rules), AS 3011.1 Electrical installations - Secondary batteries installed in buildings - Vented cells and AS/NZS 4509 Stand-alone power systems
- safety procedures for the installation, commissioning, fault diagnosis of system components
- maintenance of an ELV WECS encompassing:
 - appropriate methods and safety procedures for tower maintenance
 - appropriate maintenance methods and safety procedures, including WECS power output, voltage regulation, and transmission cable voltage-drop, manual and automatic furling, and shutdown
 - safety procedures for the maintenance of system components
 - maintenance schedule for the system
- tower maintenance
- relevant industry standards
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to installing small WECS for stand-alone applications
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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