



Australian Government

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

Release: 1

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

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 solve problems in wind energy conversion systems (WECS) rated up to 10 kilowatt (kW).

It includes preparing to work on WECS, solving problems in WECS, completing work and documenting problem-solving activities.

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

Pre-requisite Unit

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 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

PERFORMANCE CRITERIA

Elements describe the essential outcomes.

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

1 Prepare to work on WECS

- 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** Risk control measures are applied in accordance with workplace procedures prior to commencing work
- 1.3** Nature of apparatus problem is identified from documentation or from relevant person/s to determine the scope of work
- 1.4** Instructions for coordinating work with others is obtained from relevant person/s and applied
- 1.5** Materials required for the work are identified and accessed in accordance with workplace procedures
- 1.6** Tools, equipment and testing devices required to carry out work are obtained and checked for correct operation and safety

2 Solve problem in WECS

- 2.1** Workplace risk control measures and procedures are applied
- 2.2** Need to test or measure live electrical work is determined in accordance with WHS/OHS requirements and conducted in accordance with workplace procedures
- 2.3** Circuits are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.4** WECS problems are solved using measured and calculated values of apparatus operating parameters and in accordance with workplace procedures
- 2.5** Problems are solved without damage to apparatus, circuits, the surrounding environment and services using sustainable energy practices

3 Complete work and document problem-solving 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 Justification for solutions used to solve WECS problems is documented
- 3.4 Work completion is documented and relevant person/s notified in accordance with workplace procedures

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.

Problem solving in WECS must include the following:

- installation, fault-finding, maintenance or development work functions on at least three of the following:
 - determining the operating parameters of an existing apparatus
 - identifying and locating electrical faults
 - identifying and locating mechanical faults

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK130A Solve problems in wind energy conversion systems rated up to 10 kW.

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

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Performance Evidence

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

- understanding the nature of the problem
- using established routines to solve apparatus problems
- providing viable solutions to apparatus problems
- documenting justification for the solutions used
- 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 electrical testing/measurement requirements
- identifying and accessing materials, tools, equipment and testing devices
- solving problems in wind energy conversion systems (WECS).

Knowledge Evidence

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

- types, construction and operating features of small WECS, construction and operating features to the extent indicated by the following aspects:
 - basic operation of lift and drag type WECS
 - characteristics of WECS in terms of power and torque, efficiency (power and output co-efficient), solidity and tip speed ratio
 - major categories and sub-categories of WECS
 - advantages and disadvantages of each type of WECS
 - suitable materials for the construction of WECS taking into consideration fatigue stresses

and environmental conditions such as salt air, humidity and ice

- typical system configurations and components for stand-alone power systems and water pumping
- strategies and/or mechanisms to control mechanical stresses on the WECS in gale force winds and power output for battery charging
- appropriate types of WECS for a particular application
- problem-solving techniques
- 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 encompassing:
 - power output for battery charging
 - water pumping.

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 solving problems in WECS
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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