

# **UEERE9992Y Install off-grid power conversion equipment to electrical installation**

## **Modification History**

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

## **Application**

This unit involves the skills and knowledge required to install off-grid power conversion equipment to electrical installation.

It includes preparing to install off-grid system to electrical installation, installing off-grid system to electrical installations, and completing and reporting installation activities.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, is required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

## **Pre-requisite Unit**

UEEEL0039 Design, install and verify compliance and functionality of general electrical installations

UEERE9994Y Install battery storage to power conversion equipment

UEERE0016Y Install photovoltaic systems to power conversion equipment  
and

UEERE9991Y Conduct site survey for off-grid photovoltaic/generating set systems  
or

UEERE9999Y Conduct site survey for grid-connected photovoltaic and battery storage systems

## Competency Field

Renewable Energy

## Unit Sector

Electrotechnology

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

#### **1 Prepare to install off-grid power conversion equipment to electrical installation**

### PERFORMANCE CRITERIA

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

- 1.1** Nature the installation is verified from design documentation and any design concerns identified referred to designer
- 1.2** WHS/OHS processes and procedures for relevant work area are identified and applied in accordance with workplace procedures
- 1.3** WHS/OHS hazards are identified, risks assessed, reported to relevant person/s and workplace procedures for risk control measures applied in preparation for work
- 1.4** System installation is planned in consultation with others impacted by the work and sequenced appropriately
- 1.5** Location of system components is verified according to design within the constraints of the building structure and regulations
- 1.6** Materials, components, tools, equipment and testing devices required are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.7** Live testing, measurement and isolation requirements determined in accordance with WHS/OHS requirements and workplace procedures

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| <b>2 Install off-grid power conversion equipment to electrical installation</b> | <b>2.1</b> Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures  |
|   | <b>2.2</b> System components are installed to comply with design, manufacturer specifications, industry standards and regulatory requirements   |
|   | <b>2.3</b> Wiring is terminated at system components and mandatory tests conducted prior to energisation  |
|   | <b>2.4</b> Quality checks of installed apparatus are conducted in accordance with workplace procedures  |
|   | <b>2.5</b> System is programmed in accordance manufacturer specifications and design  |
|   | <b>2.6</b> Testing and commissioning of the system is conducted in accordance with design documentation, regulations, relevant industry standards and manufacturer specifications                                   |
|   | <b>2.7</b> Worksite is cleaned and made safe in accordance with workplace procedures  |
|   | <b>2.8</b> 'As-installed' system and associated equipment are documented, manuals produced, and system is handed over to required person/s as per legislation, regulations, industry standards and job requirements |

## 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 Electrotechnology Training Package Companion Volume Implementation Guide.

## Unit Mapping Information

This is a new unit.

## Links

UEE - Electrotechnology Training Package Companion Volume Implementation Guide at:  
[sector webpage link here]

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# **Assessment Requirements for UEERE9992Y Install off-grid power conversion equipment to electrical installation**

## **Modification History**

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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 and performance criteria on at least two separate occasions and include:

- installing off-grid systems to electrical installation, including:
  - applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
  - verifying design and resolving any issues with designer
  - coordinating work with relevant person/s
  - determining and applying live testing, measurement and isolation requirements
  - reading and interpreting drawings/diagrams related to apparatus locations and circuit connections
  - applying appropriate installation methods for off-grid systems
  - testing system operation and verifying compliance with standards and job specifications
  - connecting and commissioning in accordance with industry standards and regulations
  - completing necessary documentation, including handing over system operational documents to the customer.

## **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:

- system configurations including multiple energy sources including:
  - systems with d.c. loads only
  - systems with d.c. and ac. loads
  - systems with a.c. loads
  - renewable energy only systems including PV, wind and micro-hydro
  - hybrid systems comprising one or more RE system with fuel generator
- electrical installation requirements including:

- methods used in wiring and connecting the following in accordance with relevant Australian Standards and manufacturers requirements:
  - multiple PCEs and associated control equipment
  - PCEs with generating sets
  - PCEs and fuel generators directly with loads or with switchboards or distributions board
- considerations involved in choosing the cable routes
- selection and locating the associated protection and isolating devices in accordance with relevant Australian standards and industry guidelines
- wiring diagrams for the off-grid RE system showing the general circuit layout and protection between the various system components
- system control installation including:
  - control and monitoring equipment
  - associated cabling
  - control programming
- system testing and commissioning
- system documentation
- relevant manufacturer specifications
- relevant safe work method statements (SWMS)/job safety assessments or risk mitigation processes
- relevant workplace documentation, 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 workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in 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 and setting up off-grid systems

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

## Links

UEE - Electrotechnology Training Package Companion Volume Implementation Guide at:  
[sector webpage link here]

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