

## **UEERE9986Y Coordinate the installation, fault finding and repair of micro grid systems**

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 Coordinate the installation, fault finding and repair of micro grid systems.

It includes verifying design and liaising with designer as required, engaging and scheduling contractors and other experts required for completion of work, planning the installation and repair of micro-grid systems, ensuring installed/repared system components are compliant, conducting quality checks, ensuring system is correctly programmed, testing and commissioning the system and completing necessary documentation.

Micro-grids can include a number of different configurations, both grid-connected and off-grid. They require the installation of the individual generation equipment (including RE systems) which supply up to the Point of Common Supply (POCS). Network of data interconnection and the programming require the installation of the individual data communication to a central data network and commissioning of the data system. A team of specialized line workers and engineer would complete the distribution system between the individual systems, this would have been part of the coordinators design brief.

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.

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

### **Competency Field**

Renewable Energy

## Unit Sector

Electrotechnology

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

### PERFORMANCE CRITERIA

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

#### **1 Prepare to coordinate work on micro-grid systems**

- 1.1** Nature the installation is verified from design documentation and any design concerns identified referred to designer
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) processes and procedures are identified and applied in accordance with workplace procedures
- 1.3** Engagement and scheduling of contractors and other experts required for completion of work is arranged, and roles, responsibilities and levels of authority confirmed
- 1.4** Work 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

#### **2 Coordinate installation of micro-grid systems**

- 2.1** Circuits/machines/plant are isolated in accordance with WHS/OHS requirements and workplace procedures
- 2.2** Transport of equipment to the site is confirmed in accordance with workplace procedures

- 2.3** System components are installed by relevant personnel to comply with design, manufacturer specifications, industry standards and regulatory requirements
  - 2.4** Installation/construction work of other parties is confirmed as compliant with industry standards, regulations and manufacturer specifications prior to commencing each stage of the project
  - 2.5** Quality checks of installed apparatus are conducted in accordance with workplace procedures
  - 2.6** System is programmed by relevant personnel in accordance with manufacturer specifications and design
  - 2.7** Testing and commissioning of the system is conducted in accordance with design documentation, regulations, relevant industry standards and manufacturer specifications
- 3 Coordinate fault finding and repair of micro-grid systems**
  - 3.1** Nature of reported fault/issue is verified
  - 3.2** Circuits/apparatus are confirmed as isolated in accordance with WHS/OHS requirements and workplace procedures
  - 3.3** Fault or faults are diagnosed, faulty equipment is identified, and the replacement products required are documented by relevant personnel
  - 3.4** System is made safe, faulty apparatus is dismantled, recorded and stored by relevant personnel in accordance with manufacturer guides and stakeholder instructions
  - 3.5** Repaired or replaced apparatus is assembled by relevant personnel in accordance with manufacturer guidelines, industry standards and regulation
  - 3.6** Testing and re-commissioning of the system is conducted in accordance with design documentation, regulations, relevant industry standards and manufacturer specifications
- 4 Complete and report work activities**
  - 4.1** Work area is cleaned and made safe

- 4.2** '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 UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Installation, fault finding and repair of micro grid systems must include:

- verification of design
- confirming assembly of micro-grid components is compliant with regulation and manufacturer specification
- confirming commissioning of micro-grid system is in accordance with design documentation, regulations, relevant industry standards and manufacturer specifications.

## Unit Mapping Information

This is a new unit

## Links

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

# **Assessment Requirements for UEERE9986Y Coordinate the installation, fault finding and repair of micro grid systems**

## **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 two occasions and include:

- coordinating installation, fault finding and repair of micro-grid systems 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
  - engaging and scheduling of contractors and other experts required for completion of work and confirming roles, responsibilities and levels of authority
  - planning work in consultation with others impacted by the work and sequenced appropriately
  - ensuring installed/repaired system components comply with design, manufacturer specifications, industry standards and regulatory requirements
  - conducting quality checks of installed apparatus
  - ensuring system is programmed in accordance manufacturer specifications and design
  - testing and commissioning the system in accordance with design, regulations, relevant industry standards and manufacturer specifications
  - 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:

- conducting and reporting the outcomes of site surveys for renewable energy systems
- design principles for grid-connected, off-grid and micro-grid systems
- processes, procedures and techniques for the installation of:
  - grid connected photovoltaic systems
  - grid connected energy storage systems
  - power conversion equipment to the grid
  - power conversion equipment to essential loads
  - off-grid systems to an electrical installation

- micro-grid system components and operating systems
- 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 in accordance with relevant Australian Standards and manufacturers requirements
  - 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 RE systems showing the general circuit layout and protection between the various system components
- system control installation including:
  - control and monitoring equipment
  - associated cabling
  - control programming
- fault finding, repair and maintenance of grid-connected and off-grid systems
- micro-grid system fault finding including:
  - procedures for individual equipment
  - procedures for interconnected systems
- micro-grid system maintenance procedures including:
  - requirements for individual equipment
  - requirements for interconnected systems.
  - requirements including relevant industry standards, regulations and manufacturer requirements
- micro-grid system testing and commissioning procedures including:
  - safe testing of equipment
  - safe testing of system operation
- 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 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
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

## Links

Companion Volume implementation guides are found in VETNet - -