



**Australian Government**

# **UEPMNT445 Diagnose and repair faults in large scale wind turbine generators**

**Release: 1**

# UEPMNT445 Diagnose and repair faults in large scale wind turbine generators

## Modification History

**Release 1.** This is the first release of this unit of competency in the UEP Generation Training Package.

## Application

This unit involves the skills and knowledge required to diagnose and repair faults in large scale wind turbine generator systems.

Diagnosing and repairing faults is the process of inspecting wind turbine generator systems to identify problems and ensure repairs take place. The aim is to enhance the overall delivery of large scale wind turbine generator systems.

Competency in this unit requires the ability to gather data, interpret data to establish a theory about fault, repair faults and record faults. Individuals will, in general, work under supervision in an electrical, electronic and/or mechanical equipment repair workshop or on site.

Power generation maintenance personnel are typically trained and authorised to receive permits to work.

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

### **Note: Workplace practice**

The application of the skills and knowledge described in this unit of competency may require a licence or training permit to practice in the workplace, where work is carried out on gas and electrical installations. Additional and/or other conditions may apply under state and territory legislative and regulatory licensing requirements.

## Pre-requisite Unit

UEPMNT371 Maintain large scale wind turbines generators

UEENEEG108A Troubleshoot and repair faults in low voltage electrical apparatus and circuits

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in D.C. circuits

UEENEEE105A Fix and secure electrotechnology equipment

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEG006A Solve problems in single and three phase low voltage machines

UEENEEG033A Solve problems in single and three phase low voltage electrical apparatus and circuits

UEENEEG063A Arrange circuits, control and protection for general electrical installations

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage A.C. circuits

UEENEEG106A Terminate cables, cords and accessories for low voltage circuits

## Competency Field

Maintenance

## Unit Sector

Electricity generation

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

#### 1 Gather data

#### 2 Interpret data to establish hypothesis about fault

### PERFORMANCE CRITERIA

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

- |            |                                                                                                                                                                               |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1.1</b> | Wind turbine generator system's data logging information and error codes are accessed, in accordance with workplace procedures                                                |
| <b>1.2</b> | Wind turbine generator system's sensory data on fault is gathered                                                                                                             |
| <b>1.3</b> | Hard copy or online documentation is accessed to support fault finding process, in accordance with workplace procedures                                                       |
| <b>1.4</b> | Fault indicators and error codes are examined and interpreted, in accordance with workplace procedures                                                                        |
| <b>1.5</b> | Circuit diagrams, manufacturers' specifications, schematics and/or consultation with technical advisors are used to determine circuit and system characteristics and function |
| <b>2.1</b> | Wind turbine generator system performance parameters are identified and applied to interpretation of fault data                                                               |
| <b>2.2</b> | Wind turbine generator system faults are verified, or localised, using approved techniques, procedures, tools and test equipment                                              |

- 2.3** Priorities are set for testing or replacement of specific components, wiring and connections in wind turbine generator systems
- 3 Repair fault**
- 3.1** Risk analysis is undertaken, in accordance with workplace procedures, and is communicated to the work team
- 3.2** Safety precautions including circuit isolations, physical barriers and other protective devices or systems are used, where appropriate
- 3.3** Tests are conducted to ensure fault has been correctly repaired or isolated, in accordance with workplace procedures
- 3.4** Wind turbine generator system faulty components that have been removed from service are examined and cause of problem is identified
- 3.5** Loose connections or wiring in the wind turbine generator system are repaired, in accordance with workplace procedures
- 3.6** Parts or components are removed and replaced with tested and operational parts
- 3.7** Wind turbine generator system is tested, in accordance with workplace procedures, to ensure correct operation
- 3.8** Fault finding process is escalated to repairing a complex fault using a technical adviser, if required
- 4 Record fault**
- 4.1** Wind turbine generator system's faulty components and parts are correctly tagged, identified and stored, in accordance with workplace procedures
- 4.2** Wind turbine generator system's faults are recorded, 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 Companion Volume Implementation Guide.

## Unit Mapping Information

This unit replaces and is equivalent to UEPMT445A Diagnose and repair faults in large scale wind turbine generators.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=1715b9fa-e7bd-441c-bb8d-cf22c9c825a8>

# Assessment Requirements for UEPMNT445 Diagnose and repair faults in large scale wind turbine generators

## Modification History

**Release 1.** This is the first release of this unit of competency in the UEP Generation Training Package.

## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and includes:

- applying Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) requirements including:
  - emergency procedures
  - hazard identification
  - risk control measures
  - safe working practices
- communicating with personnel
- determining permit to work requirements
- diagnosing wind turbine generator system faults
- gathering wind turbine generator system data
- implementing legislation, industry standards, codes of practice and regulations
- interpreting data logs and equipment error code to determine of fault
- interpreting wind turbine generator system data to establish theory about faults
- reassembling wind turbine generator system
- recording faults
- repairing wind turbine generator system faults
- replacing faulty equipment
- replacing wind turbine generator system equipment and/or components
- testing wind turbine generator system systems including pitch system, yaw system, gearbox, generator, control systems, braking and start up systems and weather monitoring systems
- using manufacturers' specifications and manuals

## Knowledge Evidence

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

- data logs and system

- diagnosis techniques for wind turbine generator system faults
- error codes
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- reassembly techniques for wind turbine generator system equipment and/or components
- replacement techniques for wind turbine generator system equipment and/or components
- tests for wind turbine generator systems and equipment
- types and characteristics of wind turbine generator systems
- WHS/OHS legislated requirements including:
  - emergency procedures
  - risk control measures
  - hazard identification
  - safe working practices
- wind turbine generator design and control system
- wind turbine generator system testing and function
- workplace documentation
- workplace policies and procedures

## Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the Standards for Registered Training Organisations current at the time of assessment.

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.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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 currently used in industry
- applicable documentation including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

## Links

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