



Australian Government

UEPMNT447 Diagnose and repair faults in wind turbine generator electrical systems

Release: 1

UEPMNT447 Diagnose and repair faults in wind turbine generator electrical systems

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 electrical systems.

Diagnosis and repair of faults is the process of optimising large scale wind turbine generator electrical system outcomes through regular inspection and verification of operational efficiency.

Competency in this unit requires the ability to gather data, interpret data to establish hypothesis about wind turbine generator electrical system fault, repair wind turbine generator electrical system fault and record wind turbine generator electrical system fault. 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 turbine generators

UEPMNT442 Maintain wind turbine generator electrical systems

UEPMNT445 Diagnose and repair faults in large scale wind turbine generators

UEENEEE102A Fabricate, assemble and dismantle electrotechnology 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

UEENEEG108A Troubleshoot and repair faults in low voltage electrical apparatus and 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 wind turbine generator electrical system fault

PERFORMANCE CRITERIA

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

- 1.1** Data logging information and error codes are accessed, in accordance with workplace procedures
- 1.2** Sensory data on fault is gathered, in accordance with workplace procedures
- 1.3** Documentation is accessed, in accordance with workplace procedures, to support fault finding process
- 1.4** Built in fault indicators and error codes are, where appropriate, examined and interpreted
- 1.5** Reference to circuit diagrams, manufacturers' specifications, schematics or consultation with technical adviser is used to determine electrical circuit or system functions and characteristics
- 2.1** Knowledge of wind turbine generator electrical systems and performance parameters is applied to interpretation of fault data

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| | 2.2 | Wind turbine generator electrical system faults are verified or localised using appropriate techniques, tools and test equipment, in accordance with workplace procedures. |
| | 2.3 | Priorities are set for testing or replacement of specific components, wiring and connections in the wind turbine generator electrical system |
| 3 Repair wind turbine generator electrical system fault | 3.1 | Risk analysis is undertaken and is communicated to work team and appropriate personnel, in accordance with workplace procedures |
| | 3.2 | Safety precautions including circuit isolations, physical barriers and other protective devices or systems are, where appropriate, used in accordance with workplace procedures |
| | 3.3 | Tests are conducted to ensure wind turbine generator electrical system fault has been isolated |
| | 3.4 | Faulty components are removed from service and are examined to identify the cause of the problem |
| | 3.5 | Loose connections or wiring are repaired, in accordance with workplace procedures |
| | 3.6 | Faulty parts of wind turbine generator electrical system are removed and replaced with tested and operational parts |
| | 3.7 | Wind turbine generator electrical system is tested, in accordance with workplace procedures, to ensure correct operation |
| | 3.8 | Repairs to complex faults are, if required, escalated, in accordance with workplace procedures, to a technical adviser |
| 4 Record wind turbine generator electrical system fault | 4.1 | Wind turbine generator electrical system faulty components and parts are tagged, identified and stored, in accordance with workplace procedures |
| | 4.2 | 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 UEPMT447A Diagnose and repair faults in wind turbine generator electrical systems.

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 UEPMNT447 Diagnose and repair faults in wind turbine generator electrical systems

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
- gathering data including faulty indicators, error codes and sensory data
- implementing legislation, industry standards, codes of practice and regulations
- interpreting data to establish theory about wind turbine generator electrical system faults
- recording wind turbine generator electrical system faults
- removing and repairing wind turbine generator electrical system faults
- tagging and storing faulty wind turbine generator electrical system parts
- testing wind turbine generator electrical system
- undertaking risk analysis
- using manufacturers' specifications and manuals
- utilising safety precautions
- verifying faults

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:

- fault diagnosis and verification
- installation and/or repair of wind turbine generator electrical system
- isolations

- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- risk analysis
- safety precautions
- tag and storage of faulty wind turbine generator electrical system parts
- techniques for replacing damaged wiring
- WHS/OHS legislated requirements including:
 - emergency procedures
 - risk control measures
 - hazard identification
 - safe working practices
- wind turbine generator electrical system testing
- 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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