



Australian Government

UEPMNT005 Diagnose and repair faults in wind turbine control systems

Release: 1

UEPMNT005 Diagnose and repair faults in wind turbine control systems

Modification History

Release 1. This is the first release of this unit of competency in the UEP Electricity Supply Industry - Generation Sector Training Package Release 2.0.

Application

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

Diagnosing and repairing faults is the process of optimising the outcomes of large scale wind turbine control systems through regular inspections and verification of operational efficiency.

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

Licensing/Certification Information

The application of the skills and knowledge described within this unit may require a licence/registration to practice in the workplace. Other conditions may also apply under State and Territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit. For this unit persons must have one of the following as an entry requirement:

- Unrestricted Electrical Licence issued in an Australian State or Territory, or
- Electrical Fitter Occupational Licence issued in an Australian State or Territory, or
- UEEEL0028 Conduct compliance and functional verification of electrical apparatus and existing circuits, or
- UEEEL0039 Design, install and verify compliance and functionality of general electrical installations.

Pre-requisite Unit

UEPOPS347 Operate and monitor supervisory control and data acquisition systems

UEPMNT010 Maintain wind turbine control systems

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Gather data

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' recommendations and specifications, schematics or consultation with technical advisor is used to determine control system circuit function and characteristics

2 Interpret data to establish hypothesis about wind turbine control system fault

- 2.1 Knowledge of wind turbine control systems and performance parameters is applied to interpretation of fault data
- 2.2 Wind turbine control systems 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 control system

3 Repair wind turbine control 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 control system fault has been isolated
 - 3.4 Loose connections or wiring are repaired in accordance with workplace procedures
 - 3.5 Faulty parts of wind turbine control system are removed and replaced with tested and operational parts
 - 3.6 Wind turbine control systems are tested in accordance with workplace procedures, to ensure correct operation
 - 3.7 Repairs to complex faults are escalated in accordance with workplace procedures to a technical adviser
- 4 Record wind turbine control system fault**
- 4.1 Wind turbine control system's 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 UEP Electricity Supply Industry - Generation Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEPMNT448 Diagnose and repair faults in wind turbine generator control 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 UEPMNT005 Diagnose and repair faults in wind turbine control systems

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Performance Evidence

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

- 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
- complying with regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- determining permit to work requirements
- gathering data
- interpreting data to establish theory about wind turbine control system faults
- interpreting fault code and similar data produced by control system monitoring
- recording wind turbine control system faults
- removing and repairing wind turbine control system faults
- tagging and storing faulty wind turbine control system parts
- testing wind turbine control system
- undertaking risk analysis
- 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 and performance criteria and range of conditions and include knowledge of:

- data collection
- fault codes and indicators from wind turbine control components

- fault diagnosis and verification
- installation and/or repair
- isolations
- regulations, industry standards, legislative requirements, codes of practice, manufacturers' recommendations and specifications, and environmental requirements
- risk analysis
- safety precautions
- sensor data analysis
- tag and storage of faulty wind turbine control system parts
- techniques for replacing damaged wiring
- tests for wind turbine control system
- WHS/OHS legislated requirements, including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- wind turbine control systems, types and characteristics
- workplace documentation
- workplace 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
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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