



Australian Government

UEPMNT440 Diagnose and repair faults in power plant inverter systems

Release: 2

UEPMNT440 Diagnose and repair faults in power plant inverter systems

Modification History

Release 2. Minor release to update superseded pre-requisite units.

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 power generation plant inverter systems, including associated accessories, components and wiring systems.

The diagnosis and repair of inverter system faults requires the inspection, repair and verification to ensure that it is working efficiently and meeting operational requirements.

Competency in this unit requires the ability to plan work, verify fault, find fault, determine cause of fault, repair fault and complete all work tasks. 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

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0043 Solve problems in direct current circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0011 Evaluate performance of low voltage electrical apparatus

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0020 Solve problems in low voltage A.C. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

UEPMNT366 Maintain power plant inverter systems

Competency Field

Maintenance

Unit Sector

Electricity generation

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan and prepare for work

PERFORMANCE CRITERIA

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

- 1.1** Requirements including scope of work and assigned roles are identified and confirmed with appropriate personnel or by site inspection, in accordance with workplace procedures
- 1.2** Work, Health and Safety (WHS)/Occupational Health and Safety (OHS) regulations, legislative requirements, industry standards, codes of practice, manufacturers' specifications, environmental obligations and workplace procedures are reviewed in preparation for work
- 1.3** Resources are obtained and inspected for compliance with job specifications
- 1.4** Relevant plans, drawings and manuals are selected and used, in accordance with workplace procedures
- 1.5** Correct quantity of materials and components for work are obtained and inspected for compliance with job specification
- 1.6** Work is planned, sequenced and prioritised, in accordance with workplace procedures

- 1.7 Potential hazards are identified and risk control measures are selected and implemented, in accordance with workplace procedures
 - 1.8 Work area is prepared, in accordance with workplace procedures
 - 2 Verify fault**
 - 2.1 Normal performance and function of inverter system equipment is ascertained by consulting appropriate personnel and reference sources, in accordance with workplace procedures
 - 2.2 Fault indicators, technical information and diagnostic techniques are used to verify reported faults, in accordance with workplace procedures
 - 2.3 Faults are reproduced and monitored, if possible, in accordance with workplace procedures
 - 3 Find fault**
 - 3.1 Isolations are confirmed, where appropriate, in accordance with workplace procedures
 - 3.2 Equipment components, wires and terminations are inspected for faults, in accordance with workplace procedures
 - 3.3 Diagnostic techniques are selected and used, in accordance with workplace procedures
 - 3.4 Components are disconnected to enable accurate test measurements of suspected faulty components, without concern of back feed readings, in accordance with workplace procedures
 - 3.5 Test and measurement instruments are used, in accordance with workplace procedures and manufacturers' instructions
 - 4 Determine cause of fault**
 - 4.1 Appropriate personnel are consulted to obtain details relating to faulty system, in accordance with workplace procedures
 - 4.2 Use is made of information from fault indicators and maintenance records, in accordance with workplace procedures
 - 4.3 Conclusions about nature and cause of fault are reached from analysis of available evidence, in accordance with workplace procedures

5 Repair fault

- 5.1** Isolations are confirmed, where appropriate, in accordance with workplace procedures
- 5.2** Faulty, worn or damaged components are replaced or repaired, in accordance with workplace procedures
- 5.3** Parts and components are selected and used, in accordance with manufacturers' specifications and workplace procedures
- 5.4** Inverter system components are disconnected for testing and are reconnected having been proven free of faults, and all terminations are then checked to ensure they are electrically and mechanically sound, in accordance with workplace procedures
- 5.5** Faults are repaired, in accordance with workplace procedures
- 5.6** Final inspection is performed, in accordance with workplace procedures

6 Complete work

- 6.1** Work is completed and appropriate personnel are notified, in accordance with workplace procedures
- 6.2** Work area is cleared of waste, cleaned, restored and secured, in accordance with workplace procedures
- 6.3** Tools and equipment are maintained and stored, in accordance with workplace procedures
- 6.4** Work completion details are finalised, 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 UEPMNT440A Diagnose and repair faults in power plant inverter 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 UEPMNT440 Diagnose and repair faults in power plant inverter systems

Modification History

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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, 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
- completing work as per scheduled requirements
- determining cause of faults using data analysis techniques and tools
- determining permit to work requirements
- finding faults using diagnostic techniques and procedures
- implementing legislation, industry standards, codes of practice and regulations
- interpreting manufacturers' specifications and manuals
- planning and preparing for diagnosis and repair of faults in power plant inverter systems work
- repairing faults using repair techniques and procedures
- selecting materials
- using manufacturers' specifications and manuals
- utilising test and measurement instruments
- verifying faults using verification techniques

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:

- diagnostic techniques

- equipment and materials
- generation plant and equipment, its location and operation
- isolations
- legislation, industry standards, codes of practice and regulations
- manufacturers' specifications and manuals
- permit to work system
- repair techniques
- test and measurement instruments
- typical arrangements of power production plant
- verification techniques
- WHS/OHS legislated requirements including:
 - emergency procedures
 - hazard identification
 - risk control measures
 - safe working practices
- 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.

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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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