



Australian Government

UEEIC0016 Diagnose and rectify faults in a.c. motor drive systems

Release: 1

UEEIC0016 Diagnose and rectify faults in a.c. motor drive systems

Modification History

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 diagnose and rectify faults in systems controlling starting, speed, torque, power output, efficient running and braking alternating current (a.c.) motor drive systems.

It includes working safely; interpreting technical data; applying knowledge of a.c. motor operating parameters to logical fault-finding techniques; implementing fault rectification, safety and functional inspection; testing; and reporting work activities and outcomes.

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) a.c. or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

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.

Permits may also be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

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

Pre-requisite Unit

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

UEEEL0025 Test and connect transformers

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to diagnose and rectify a.c. motor drive system faults

PERFORMANCE CRITERIA

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

- 1.1** WHS/OHS processes and workplace procedures for a given work area are identified, obtained and applied
 - 1.2** Hazards are identified, WHS/OHS risks assessed, and control measures and workplace procedures are implemented in preparation for work
 - 1.3** Safety hazards that have not previously been identified are documented on job safety assessments and risk control measures devised and implemented in consultation with relevant person/s
 - 1.4** Scope of fault/s is determined from fault report/s, relevant documentation and in consultation with relevant person/s
 - 1.5** Relevant person/s is consulted to ensure work is coordinated effectively with others involved on the worksite
 - 1.6** Tools, equipment and testing devices needed to diagnose faults are obtained in accordance with workplace procedures and checked for correct operation and safety
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- 2.1** WHS/OHS risk control measures and workplace procedures for carrying out work are followed
 - 2.2** Need to inspect, test or measure live work is determined and conducted in accordance with WHS/OHS requirements and workplace procedures, as required
 - 2.3** Circuits/machines/plant are inspected, checked and isolated, as required, in accordance with WHS/OHS requirements and workplace procedures
 - 2.4** Logical diagnostic methods/techniques are applied to diagnose a.c. motor control system faults employing

2 Diagnose and rectify a.c. motor drive system fault/s

- measurements and estimations of system operating parameters referenced to system operational requirements
- 2.5 Fault scenarios are tested and confirmed as being the source of system problems in accordance with workplace procedures
 - 2.6 Causes of the faults are identified and relevant person/s identified to rectify the fault, as required, outside the scope of the a.c. motor drive control system
 - 2.7 Faults in the control components of the system are rectified in accordance with a.c. motor control system operation standards
 - 2.8 System is inspected and tested to verify that the system operates as intended and to specified requirements
 - 2.9 Decisions for dealing with unplanned situations are determined from discussions with relevant person/s, job specifications and requirements
 - 2.10 Methods for dealing with unplanned situations are selected on the basis of safety and specified work outcomes
 - 2.11 Diagnosis and rectification activities are carried out efficiently, without unnecessary waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy practices
- 3 Complete and report fault diagnosis and rectification activities**
- 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed
 - 3.2 Worksite is made safe in accordance with workplace safety procedures
 - 3.3 Rectification of faults is documented in accordance with workplace procedures
 - 3.4 Relevant person/s is notified in accordance with workplace procedures that the system faults have been rectified

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.

Diagnosing and rectifying faults in a.c. motor drive systems must include at least four of the following:

- faults in systems controlling starting, speed, torque, power output, efficient running and braking a.c. motor drive system

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI145A Diagnose and rectify faults in a.c. motor drive systems.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEIC0016 Diagnose and rectify faults in a.c. motor drive systems

Modification History

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Performance Evidence

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

- applying logical diagnostic methods
- applying problem-solving techniques
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - implementing workplace procedures and practices
 - using of risk control measures
- applying sustainable energy principles and practices
- completing and reporting fault diagnosis and rectification activities
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- documenting fault rectification activities and outcomes in accordance with workplace procedures
- identifying faults and determining components needed to rectify them
- inspecting, testing and verifying that the alternating current (a.c.) electrical system operates correctly
- preparing to diagnose and rectify faults in a.c. motor drive system
- rectifying faults in a.c. motor drive system controls
- using fault scenarios to test the cause of system faults.

Knowledge Evidence

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

- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant problem-solving techniques
- relevant WHS/OHS legislated requirements

- relevant workplace documentation
- relevant workplace policies and procedures
- variable speed drive (VSD) systems for a.c. motors, including:
 - methods and operating principles
 - installation requirements
 - filtering
 - performance characteristics
 - set-up and commissioning
 - common faults, their symptoms and causes.

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 simulated suitable 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 simulations
- relevant and appropriate materials, tools, facilities, equipment currently used in industry
- resources that reflect current industry practices in relation to diagnosing and rectifying faults in a.c. motor drive systems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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