



Australian Government

UEEIC0051 Evaluate motor drive systems and diagnose faults

Release: 1

UEEIC0051 Evaluate motor drive systems and diagnose faults

Modification History

Release 1. This is the first release of this unit of competency in the 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 for motor drive systems.

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

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

Pre-requisite Unit

UEEEL0019 - Solve problems in direct current (d.c.) machines

UEEEL0077 - Evaluate and report on the performance of LV machines

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to evaluate motor drive systems

PERFORMANCE CRITERIA

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

1.1 Work, health and safety (WHS) / occupational health and safety (OHS) risk control measures are identified and applied

- | | | |
|---|------------|--|
| | 1.2 | Scope of work, including motor drive systems to be evaluated is determined from relevant documentation and in consultation with relevant people |
| | 1.3 | Tools, equipment and testing devices needed to diagnose faults are obtained and checked for correct operation and safety |
| 2 Evaluate motor drive systems and diagnose faults | 2.1 | Circuits/machines/plant are inspected, checked and isolated, as required, in accordance with WHS/OHS requirements and workplace procedures |
| | 2.2 | Logical diagnostic methods/techniques are applied to evaluate motor drive operation and diagnose motor control system faults employing measurements and estimations of system operating parameters referenced to system operational requirements |
| | 2.3 | Fault scenarios are tested and confirmed as being the source of system problems in accordance with workplace procedures |
| | 2.4 | Causes of the faults are identified and recommendations to rectify the fault are documented |
| | 2.5 | System is inspected and tested to verify that the system operates as intended and to specified requirements |
| | 2.6 | Evaluation and diagnosis 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 | Worksite is made safe in accordance with workplace safety procedures |
| | 3.2 | Evaluation and rectification activities are documented |
| | 3.3 | Relevant people are notified of work completion. |

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 Electrotechnology Training Package Companion Volume Implementation Guide.

Evaluating motor drive systems must include: • both a.c. and d.c. motor control systems

Unit Mapping Information

This is a new unit.

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 UEEIC0051 Evaluate motor drive systems and diagnose faults

Modification History

Release 1. This is the first release of this unit of competency in the Electrotechnology Training Package.

Performance Evidence

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

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and sustainable energy principles and practices
- applying logical diagnostic methods
- applying problem-solving techniques
- documenting fault identification activities and outcomes
- evaluating motor drive systems
- identifying faults and recommending components and process needed to rectify them
- inspecting, testing and verifying that the electrical system operates correctly
- using fault scenarios to test the cause of system faults.
- completing and reporting evaluation and fault diagnosis activities.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria 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 policies and procedures and documentation
- variable speed drive (VSD) systems for a.c. and d.c. motors, including:
 - methods and operating principles
 - installation requirements
 - filtering
 - performance characteristics
 - set-up and commissioning
 - common faults, their symptoms, causes and solutions.

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 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 motor drive systems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

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