



Australian Government

UEEEL0068 Rewind three phase low voltage induction machines

Release: 2

UEEEL0068 Rewind three phase low voltage induction machines

Modification History

Release 2. Minor change. Typographic error in prerequisites corrected.

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 prepare, place and connect coils and insulation in three phase stators and rotors in low voltage (LV) induction machine.

It includes preparing to and rewinding three phase induction machines by working safely, using tools, measuring and stator windings. It also includes applying technical and quality industry standards and completing workplace reports and winding records.

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

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

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

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0074 Wind electrical coils

UEEEL0056 Place and connect electrical coils

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

UEEEL0021 Solve problems in electromagnetic devices

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

UEEEL0025 Test and connect transformers

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to rewind three phase induction machines

2 Rewind three phase induction machine

PERFORMANCE CRITERIA

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

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|------------|--|
| 1.1 | Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied |
| 1.2 | Existing WHS/OHS risk control measures for work preparation are followed |
| 1.3 | Scope of work is determined from job specifications and regulatory requirements |
| 1.4 | Advice is sought from the work supervisor to ensure the work is coordinated effectively with others |
| 1.5 | Winding data is obtained from winding data records or directly from measurements of stator and recorded in accordance with workplace procedures |
| 1.6 | Materials required for the work are obtained in accordance with workplace procedures and job specifications |
| 1.7 | Tools, equipment and testing devices needed to carry out work are obtained and checked for correct operation and safety |
| 2.1 | Existing WHS/OHS risk control work measures are followed |
| 2.2 | Machines/equipment are checked and isolated in accordance with WHS/OHS requirements and workplace procedures |

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|------------------------------------|---|
| 2.3 | Induction machine is dismantled and parts tagged and stored to prevent loss or damage in accordance with workplace procedures and instructions |
| 2.4 | Winding is stripped from stator in accordance with workplace procedures |
| 2.5 | Stator is wound and insulated in accordance with winding data, job specifications and workplace procedures |
| 2.6 | Machine is assembled and prepared for inspection and testing in accordance with workplace procedures |
| 2.7 | Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment |
| 2.8 | Routine quality checks are conducted to ensure coils are correctly wound, with correct wire, number of turns and shape in accordance with workplace procedures and job specifications |
| 2.9 | Electrical coil work is completed within timeframe, environment and workplace conditions |
| 3 Complete workplace report | <div style="vertical-align: top; padding-right: 20px;">3.1</div> <div style="vertical-align: top; padding-right: 20px;">3.2</div> |

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.

- Dismantling and winding stators must include the following:
- three different three phase induction machines in an environment designed specifically for the purpose

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG153A Rewind three phase low voltage induction machines.

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 UEEEL0068 Rewind three phase low voltage induction machines

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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 relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including using risk control measures
- applying sustainable energy principles and practices
- completing workplace reports and forms
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- inspecting and testing completed induction machine work
- planning to rewind three phase induction machines
- rewinding three phase induction machines rated for low voltage (LV), including:
 - adhering to quality workplace procedures
 - assembling machine and preparing for inspection and testing
 - completing workplace report/forms accurately
 - dismantling machine and storing parts securely
 - following winding specifications and/or instructions
 - preparing stator for winding
 - selecting correct coils and insulation
 - winding and connecting stator correctly
- using tools safely in accordance with workplace procedures.

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:

- three phase windings, including:
 - chain, lap and wave windings

- concentrated and distributed windings
- half-coil and whole-coil windings
- half-coil winding for a three phase alternator
- pole-pitch and coil-span
- three phase stator winding
- whole-coil stator winding for a three phase alternator
- rating and cooling of alternators and the voltage regulator
- techniques of winding three phase motors, including:
 - coil connection arrangements and terminations
 - coil placement techniques
 - electrical machine insulation types and applications
 - winding insulation methods
- testing techniques, including continuity, insulation testing, use of 'growler' and magnetic field testing
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- sustainable energy principles and practices.

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 suitable 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, facilities, equipment and personal protective equipment (PPE) currently used in industry
- resources that reflect current industry practices in relation to rewinding three phase induction machines rated for LV
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, 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>