



Australian Government

UEEEL0074 Wind electrical coils

Release: 1

UEEEL0074 Wind electrical coils

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 set up coil former and winding machine/s to wind electrical coils for static and rotating electrical machines.

It includes working safely, using hand and power tools, following technical instructions and set procedures, recording work activities and winding electrical coils.

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

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

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to wind electrical coils

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) requirements and workplace procedures for a given work area are identified and understood

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|----------|----------------------------------|---|
| | 1.2 | Existing WHS/OHS risk control measures for work preparation are followed |
| | 1.3 | Work instructions are identified, obtained and applied |
| | 1.4 | Advice is sought from the work supervisor to ensure work is coordinated effectively with others |
| | 1.5 | Materials required for work are obtained in accordance with work instructions and workplace procedures |
| | 1.6 | Tools, equipment and testing devices needed to carry out electrical work are obtained and checked for correct operation and safety |
| 2 | Wind electrical coils | |
| | 2.1 | Existing WHS/OHS risk control measures for winding electrical coils work are followed |
| | 2.2 | Winding machines are checked and isolated in accordance with WHS/OHS requirements and workplace procedures |
| | 2.3 | Winding wire and insulation are selected in accordance with work instructions and workplace procedures |
| | 2.4 | Winding formers and machine are set up in accordance with workplace instructions |
| | 2.5 | Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment |
| | 2.6 | Routine quality checks are conducted to ensure electrical coils are correctly wound with correct wire, number of turns and shape in accordance with work instructions |
| | 2.7 | Coil work is completed within timeframe, environment and workplace conditions |
| 3 | Complete workplace report | |
| | 3.1 | WHS/OHS workplace completion risk control measures are followed |
| | 3.2 | Workplace report, forms/data sheets are completed accurately 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 UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Winding electrical coils must include the following:

- winding at least four different types of electrical coils in an environment designed specifically for the purpose

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG150A Wind electrical coils.

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 UEEEL0074 Wind electrical coils

Modification History

Release 1. This is the first release of this unit of competency in the UEE 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, 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 of risk control measures
- applying sustainable energy principles and practices
- completing workplace reports and documentation
- preparing to wind electrical coils
- winding electrical coils, including:
 - adhering to coil quality and workplace procedures
 - completing workplace report/forms accurately
 - dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
 - following winding job specifications
 - selecting correct winding wire and insulation
 - setting up and operating winding machine in accordance with safe operating and 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:

- collecting coil data, including:
 - coil shape
 - gauge
 - number of turns
 - type of wire, coil and insulation
- coil former types, construction/set up and factors which govern coil shape, including:
 - bore size of stator iron core
 - coil flexibility

- coil shapes
- depth of iron below the slots in the iron core
- end room
- pressure points between the coils
- types coil winding formers
- coil winding machines, including:
 - computer operated
 - foot pedal
 - layer winding machine
 - remote foot switch on a flexible lead, variable speed fitted with a face plate
 - variable speed
 - winding head fitted with a chuck
- coil insulations, including:
 - paper laminates
 - cloth, tape and adhesive tape (glass); and polyester glass laminate
 - polyester film
 - purpose
 - adhesive tape (polyester film)
 - temperature ratings
- rewind small and medium-sized solenoid coils, including:
 - strip and record data
 - prepare/insulate coil formers
 - wind each type of coil
 - finishing off process
 - test procedures
- types and purpose of testing devices, including:
 - multimeter
 - insulation resistance tester
 - wheatstone bridge
- types of tests, including:
 - continuity
 - short circuited turns
 - insulation resistance
- testing techniques to identify faulty coils, including:
 - physical inspection.
 - using a testing device
- current industry practices and technologies
- relevant job safety assessments, risk mitigation processes or operational safety precautions
- 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 winding electrical coils
- 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>