



Australian Government

Assessment Requirements for UEEEL0066 Rewind LV direct current machines

Release: 1

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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 risk control measures
- applying sustainable energy principles and practices
- completing workplace reports and documentation
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- inspecting and testing of completed machine work
- planning to rewind low voltage (LV) direct current (d.c.) machines
- rewinding d.c. machines rated for LV, including:
 - adhering to quality workplace procedures
 - assembling machine and preparing for testing
 - completing workplace reports/forms accurately
 - dismantling machine and storing parts securely
 - following winding specifications
 - preparing stator for winding
 - selecting correct coils and insulation
 - winding and connecting armature and fields correctly
 - checking dimensions
- 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:

- commutation and interpoles, including:
 - conditions for sparkless commutation and methods used to reduce sparking

- interpoles or commutating poles
- principles of commutation and advantages of interpoles
- resistance and electromagnetic field commutation
- current industry practices and technologies
- d.c. motor winding techniques
- calculations and insulation specifications, including:
 - calculation of a half coil length and the amount of copper required
 - commutators and identification of insulation specifications
 - preparation of coils and equalisers
 - preparation of copper prior to insulating coils and equalisers on armatures
- commutation and interpoles
- critical details and measurements when stripping a stator of a d.c. machine, including:
 - lap winding with equalisers
 - types of windings
 - wave winding
 - winding layout
- d.c. armature windings, including:
 - lap and wave windings, progressive and retrogressive windings
 - terms
- preparation for rewinding, including:
 - checking the condition of a stripped core
 - core loss test
 - hot spots in armature core
 - testing commutator before use
 - removing of old winding
- principles and construction, including:
 - construction of d.c. machine
 - d.c. machine types
 - types of armature windings, including parallel circuits
 - value of generated electromagnetic field
- procedures and precautions required when inspecting, testing and/or re-using a commutator, including:
 - coil position and commutator segment relationship
 - commutator wear ring
 - removal of armature leads on tungsten inert gas (TIG) welded commutator
 - TIG welded and soft soldered commutators
- selection of appropriate insulation, including:
 - B stage and VPI insulation
 - dielectric strength, temperature rating,
 - insulation properties, method of application and specific uses

- insulations used on the slot portion and overhang
- manufacturer recommendations
- reason for selecting a particular insulation
- simplex armature lap windings and wave windings, including:
 - characteristics and applications
 - commutator pitch
 - number and position of brushes
- electrical power systems LV
- identification of insulation specifications
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant safe working practices
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- simplex lap windings, including equalising connections for armature windings
- simplex wave windings, including dummy coils, comparison of lap and wave windings, and armature winding calculations
- sustainable energy principles and practices
- testing techniques, including continuity, insulation testing, use of 'growler' and magnetic field testing.

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 LV d.c. machines
- 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>