



Australian Government

Assessment Requirements for UEEEL0025 Test and connect transformers

Release: 2

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Modification History

Release 2. This is the second release of this unit of competency in the UEE Electrotechnology Training Package.

Performance criteria numbering corrected in element 2

Typographic error fixed in performance criteria 2.5

Workplace evidence requirements removed from Assessment Conditions.

Assessor requirements updated in Assessment Conditions.

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 work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures, including:
 - identifying and assessing hazards and risks, and implementing control measures
 - applying safe working procedures when connecting and testing transformers
 - checking circuits are isolated in accordance with workplace procedures and regulatory requirements
- solving problems with transformers, including:
 - determining the operating parameters of an existing transformer
 - altering an existing transformer circuit to comply with specified operating parameters
 - developing transformer circuits to comply with a specified function and operating parameters
 - determining the cause of low efficiency in an existing transformer
 - determining conditions causing an existing circuit to be unsafe
- determine polarity markings for an unidentified single phase double wound transformer
- determining the value of a transformers secondary voltage and current from nameplate data when solving problems in transformer operations
- determining voltage and current in the windings of an auto-transformer by calculation
- selecting transformers for specific application
- testing serviceability of transformers
- applying sustainable energy principles and practices

- completing problem-solving activities documentation.

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:

- AS/NZS 3000 Electrical installations requirements and restrictions on the installation and use of transformers
- methods used to insulate low voltage (LV) and high voltage (HV) transformers
- types of information stated on transformer nameplates
- types of lamination style and core construction used in transformers
- relevant industry standards relating to transformers
- application of transformers
- transmission and distribution transformers
- construction of voltage transformers
- ratings of voltage transformers
- auto-transformers and instrument transformers, including:
 - advantages and disadvantages of an auto-transformer
 - risks and safety control measures associated with connection and disconnection of instrument transformers
 - connection diagrams for instrument transformers
 - applications for auto-transformers and instrument transformers
 - construction of current transformers
 - ratings of current transformers
- transformer operation, including:
 - principles of mutual induction of a transformer
 - factors that determine the induced voltage in a transformer winding
 - determining the value of a transformers secondary voltage and current given one winding's electrical details and turns ratio
 - identification of voltage and current components of a phasor diagram for a transformer on no-load
 - principles of power transferred from the primary to secondary when a load is connected using a phasor diagram neglecting impedance drops
 - safety features specified in relevant industry standards with respect to transformers and isolating transformers
 - determining circuit operating characteristics when solving problems in LV transformers
- transformer losses, efficiency and cooling, including:
 - methods used for natural and forced cooling of transformers
 - power losses which occur in a transformer
 - tests which allow the power losses of a transformer to be determined

- relationship between transformer cooling and rating
- transformer voltage regulation including:
 - reasons for voltage variation in the output of a transformer
 - voltage regulation as applicable to a transformer
- percentage impedance, including:
 - as applied to transformers
 - techniques for determining percentage impedance of a transformer by relevant calculation
- parallel operation of transformers, including:
 - need for parallel operation of transformers
 - techniques for connecting in parallel to supply a single load (loading on transformers operating in parallel)
 - conditions/restrictions required before two transformers can be connected in parallel
 - the consequences/effect of an incorrect connection
- relevant manufacturer specifications.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessors must also hold the occupational licence for the jurisdiction the assessment is occurring where the activity being assessed requires a licence to practice.

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
- 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>