



Australian Government

UETDRSB007 Install and maintain substation direct current systems

Release: 1

UETDRSB007 Install and maintain substation direct current systems

Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 4.0.

Application

This unit includes the skills and knowledge required to install and maintain substation direct current (d.c) systems in the electricity supply industry (ESI).

It includes types, characteristics, maintenance requirements, installation procedures and common defects of batteries, chargers and associated control systems.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

Other conditions may also apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

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

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

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

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

Competency Field

Substation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

1 Prepare to install and maintain substation d.c. systems

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be done are reviewed and determined
- 1.2** Work plan is obtained, confirmed and communicated with relevant personnel in accordance with workplace requirements
- 1.3** Hazards are identified, risks assessed, and control measures identified and applied
- 1.4** Work is prioritised and sequenced for completion in accordance with work plan and workplace requirements
- 1.5** Plant, tools, equipment and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.6** Materials required for work are determined and obtained in accordance with work plan and workplace requirements
- 1.7** Liaison and communication issues with authorised personnel, authorities and clients are resolved to facilitate work, as required
- 1.8** Worksite is prepared in accordance with the work plan and workplace requirements

2 Install and maintain substation d.c. systems

- 2.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are applied and monitored
- 2.2** Hazard control measures are monitored in accordance with workplace requirements
- 2.3** Work permits are received and signed in accordance with workplace requirements
- 2.4** Lifting, working at heights, working in confined spaces and the use of plant, tools, equipment and PPE are carried out in accordance with workplace requirements

- 2.5 Substation d.c. systems are installed in accordance with workplace requirements
 - 2.6 Substation d.c. systems are maintained in accordance with workplace requirements
 - 2.7 Incidents or unplanned events are responded to in accordance with workplace requirements
 - 2.8 Quality checks of work are undertaken in accordance with work plan and workplace requirements
- 3 **Complete work and documentation**
 - 3.1 Completed work is checked for compliance against the work plan and workplace requirements
 - 3.2 Work permits are signed off in accordance with workplace requirements
 - 3.3 Worksite is rehabilitated, cleaned and made safe in accordance with workplace requirements
 - 3.4 Plant, tools and equipment are cleaned, checked and returned to storage, and surplus resources and materials are managed in accordance with workplace requirements
 - 3.5 Work records, reports and documentation are completed, and where relevant, appropriate personnel notified in accordance with workplace requirements

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 UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is not equivalent to UETDRSB23 Install and maintain substation direct

current systems.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETDRSB007 Install and maintain substation direct current systems

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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 and performance criteria on at least two (2) separate occasions and include:

- applying relevant legislation, regulations, standards, codes of practice and organisational workplace requirements including:
 - work health and safety (WHS)/occupational health and safety (OHS) requirements
- identifying hazards, assessing risks, and identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- dealing with an unplanned event on at least one (1) occasion
- obtaining and signing on and off relevant work permits in accordance with workplace requirements
- completing relevant work records, reports and documentation
- installing and maintaining at least one (1) of the following types of batteries:
 - nickel cadmium
 - lead acid
 - gel cell
 - lithium ion
- installing and maintaining at least one (1) of the following battery systems:
 - main
 - communication
 - storage
- installing and maintaining battery chargers and direct current (d.c). control circuits
- performing at least two (2) of the following types of tests:
 - cell voltage test
 - hydrometer/specific gravity test
 - battery discharge and capacity tests
 - impedance testing.

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 legislation, regulations, standards, codes of practice and organisational workplace requirements, including WHS/OHS requirements
- hazard, risk assessment and risk control requirements, including potential hazards
- types and application of PPE
- safe use of plant, tools and equipment
- application, purpose and types of permits
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident
- workplace records, reports and documentation
- operational manuals and system diagrams
- batteries, including:
 - types
 - characteristics
 - maintenance requirements
 - installation procedures
 - common defects and rectification
- battery stands and enclosures, including:
 - types
 - characteristics
 - maintenance requirements
 - installation procedures
 - common defects and rectification
 - access requirements
- charging systems, including:
 - types
 - characteristics
 - maintenance requirements
 - installation procedures
 - common defects and rectification
- substation d.c. systems, including:
 - protection
 - switching
 - monitoring
 - common panel layouts
 - uninterrupted power supply (UPS)
- specialised tools, including:

- types, construction and function
- calibration
- care and maintenance.

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 conditions involving realistic and authentic activities that replicate operational 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:

- relevant and appropriate materials, tools, equipment and PPE currently used in industry
- applicable documentation, including workplace requirements, equipment specifications, regulations, codes of practice and operation manuals.

Links

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<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>