



Australian Government

UETDRRT004 Install traction overhead wiring systems

Release: 1

UETDRRT004 Install traction overhead wiring 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 2.0.

Application

This unit involves the skills and knowledge required to install traction overhead wiring systems in the electricity supply industry (ESI).

It includes installing associated conductors whilst undertaking safe working practices on or about the running line/track, identifying and confirming road/rail management plans and electrical permits.

It also includes inspecting and checking to confirm conductors and hardware have been correctly installed in accordance with design, ensuring traction system is fit for service and updating installation data and relevant quality assurance documentation.

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 requirement 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

UETDREL001 Apply environmental requirements

UETDREL004 Operate plant and equipment in the vicinity of live electrical apparatus

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS007 Install and maintain distribution overhead conductors and cables

UETDRIS012 Install and maintain poles, structures and hardware

UETDRRT002 Install overhead traction components and equipment

Competency Field

Rail Traction

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install overhead traction wiring systems

PERFORMANCE CRITERIA

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

- 1.1** Legislation, regulations, standards, codes of practice and organisational workplace requirements for the work to be performed are referred to and confirmed
- 1.2** Required design standards and construction plans are obtained
- 1.3** Plant, tools, equipment, conductors and personal protective equipment (PPE) required for work are determined, obtained and confirmed in working order
- 1.4** Hazards are identified, risks assessed and control measures identified and applied
- 1.5** Work is prioritised and sequenced for completion in accordance with workplace requirements
- 1.6** Work permits are organised in accordance with workplace requirements
- 1.7** Worksite, road or rail management plan is prepared in accordance with workplace requirements
- 1.8** Environmental constraints applicable to the work are identified and control measures applied

2 Installation of overhead traction wiring 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** Lifting, working at heights and the use of plant, tools, equipment and PPE are carried out in accordance with

workplace requirements

- 2.3 Hazard control measures are monitored in accordance with workplace requirements
- 2.4 Work permits are instructed and issued and where appropriate signed in accordance with workplace requirements
- 2.5 Worksite, road or rail management plan is established in accordance with workplace requirements
- 2.6 Overhead traction wiring systems, including cables, fittings, traction conductors and associated equipment, are installed in accordance with job and workplace requirements
- 2.7 Overhead traction wiring systems is installed and completed in agreed timeframes, to design standards and with minimum waste in accordance with workplace requirements
- 2.8 Profiling is checked in accordance with workplace requirements
- 2.9 Incidents or unplanned events are responded to in accordance with workplace requirements
- 2.10 Quality checks of work are undertaken in accordance with workplace requirements to ensure fit for service

3 Complete work and documentation

- 3.1 Completed work is checked against design standards, construction plans and drawings for compliance and anomalies reported in accordance with workplace requirements
- 3.2 Incidents or unplanned events are reported 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 in accordance with workplace requirements
- 3.5 Surplus materials are returned to storage or disposed of in accordance with workplace requirements
- 3.6 Work permits are completed, and overhead traction

equipment or components are fit for service in accordance with workplace requirements

- 3.7** Work records, reports and documentation are completed 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 equivalent to UETTDRT21 Install traction overhead wiring 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 UETDRRT004 Install traction overhead wiring 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 2.0.

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 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)
- identifying hazards, assessing risks, identifying, applying and monitoring control measures
- obtaining, inspecting and using relevant personal protective equipment (PPE)
- installing at least four (4) of the following types of system equipment and fittings:
 - support structure
 - span
 - section insulator
 - neutral section
 - droppers
 - support equipment
 - tension regulators
 - stay/guy wire
 - tramway support network
- installing at least two (2) of the following traction conductors and cables:
 - contact/trolley*
 - catenary
 - feeder
 - midpoint anchor
 - earth conductor
 - return conductor
 - drape/potential jumper
 - (*must do)
- operating from at least one (1) of the following types of mobile plant and height equipment:
 - elevated work platform (EWP)
 - ladder

- mobile platform
- using at least two (2) of the following equipment and tools required for overhead rail traction wiring systems:
 - tensioning equipment*
 - specialised tools
 - electrical testing equipment
 - geometry profiling equipment
 - (*must do)
- dealing with an unplanned event on at least one (1) occasion
- completing relevant work records, reports and documentation.

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
- 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
- methods for running wire systems or conductors
- electrical wiring system components, including:
 - earth wires
 - feeder wire
 - catenary wire
 - contact/trolley wire
 - return conductor
 - insulators
 - surge arresters
 - cantilevers
 - droppers
 - tensioning equipment
 - current collectors
 - tram support network
 - tram fittings
 - low clearance components
- types of electrical traction systems, including:
 - auto-tensioning

- spring loaded tension
- balance weight anchor (BWA)
- fixed tension
- relationship of the components, apparatus and the conductors to the operation of the traction system
- effective current collection and wire interface
- effective registration in the traction power system
- methods of profiling overhead traction wire, including:
 - factors that impact on current collectors to achieve smooth current collector transitions and interfaces
- dynamic and static forces, including:
 - types that effect traction systems
 - techniques to minimise the adverse effects
- standards, codes, legislation, supply authority regulations and workplace requirements applicable to electrical traction
- electrical traction voltage and current circuit paths, including:
 - transmission and distribution voltages
 - traction supply system and voltages
 - return and stray current paths, including electrolysis
- relationship of sectioning, section insulator and overlaps/air gaps in a traction power system
- traction power system components, including:
 - function of transformer/rectifiers
 - configuration and purpose of traction overhead wiring systems
 - function of isolators/switches
 - function of the circuit breaker
- events constituting an unplanned event or incident
- procedures for responding to an unplanned event or incident.

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, facilities, equipment, plant and PPE currently used in industry for installing traction overhead wiring systems
- applicable documentation, including workplace requirements, relevant design standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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