



Australian Government

UEEAS0007 Assemble, mount and connect control gear and switchgear

Release: 2

UEEAS0007 Assemble, mount and connect control gear and switchgear

Modification History

Release 2. Minor Change. Typographic error in prerequisites corrected.

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 assemble, mount and connect control gear and switchgear, including the interconnections within a switchboard enclosure intended to operate at voltages up to 1,000 volts (V) alternating current (a.c.) or 1,500 V direct current (d.c.).

It includes working safely; following standards, specifications and component manufacturer requirements; matching equipment with that specified; terminating cables; connecting wiring and completing necessary documentation.

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

UEECD0020 Fix and secure electrotechnology equipment

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

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0005 Develop and connect electrical control circuits

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

Competency Field

Assembly

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan to assemble, mount and connect control gear and switchgear

PERFORMANCE CRITERIA

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

- 1.1** Switchgear and control gear assembly installation is determined and planned in accordance with job specifications, wiring and schematic diagrams
- 1.2** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for a given work area are identified and applied
- 1.3** Work instructions, including layout and wiring diagrams, are applied in accordance with workplace procedures
- 1.4** Advice is sought from supervisor to ensure work is coordinated effectively with relevant person/s
- 1.5** Materials required for the control gear and switchgear installation work are obtained in accordance with workplace procedures
- 1.6** Tools, equipment and measuring devices required to carry out work are obtained and checked for correct operation and safety

2 Assemble, mount and connect control gear and switchgear

- 2.1** Switchgear and control gear assembly hazards are identified, risks assessed and control measures are implemented in accordance with workplace procedures
- 2.2** Circuits are checked and isolated in accordance with

WHS/OHS workplace requirements and procedures

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|--|---|---|
| <p>2.3</p> <p>2.4</p> <p>2.5</p> <p>2.6</p> <p>2.7</p> <p>2.8</p> <p>2.9</p> <p>2.10</p> <p>3</p> <p>3.1</p> <p>3.2</p> <p>3.3</p> | <p>Component layout is in accordance with job specifications, wiring and schematic diagrams</p> <p>Switchgear/control gear is fitted in accordance with work instructions, industry standards, manufacturer specifications and workplace procedures</p> <p>Interconnections are made in accordance with work instructions, industry standards and workplace procedures</p> <p>Regular quality checks are carried out in accordance with workplace procedures</p> <p>Completed switchboard function is tested in accordance with workplace procedures, industry standards and manufacturer specifications</p> <p>Labelling and numbering cable are undertaken in accordance with industry standards, wiring and schematic diagrams</p> <p>Unplanned events are referred to supervisor for directions in accordance with workplace procedures</p> <p>Assembly work is carried out without waste of materials or damage to apparatus, the surrounding environment or services and using sustainable energy practices</p> <p>Finalise and inspect assembled control gear and switchgear installation</p> | <p>Assembled switchboard panel is visually inspected and checked against work instructions, industry standards and manufacturer specifications in accordance with workplace procedures</p> <p>Problem-solving techniques are used where corrective actions to assembled components are required in accordance with regulatory requirements and industry standards</p> <p>Work completion is documented and relevant person/s notified in accordance with workplace procedures</p> |
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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.

Assembling at least two different control panels must include:

- general supply main switches
- multiple supplies
- safety services

Unit Mapping Information

This unit replaces and is equivalent to UEENEEA110A Assemble, mount and connect control gear and switchgear.

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 UEEAS0007 Assemble, mount and connect control gear and switchgear

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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, performance criteria and range of conditions on at least two separate occasions and include:

- applying labelling and numbering to cables and using terminal numbering in accordance with relevant industry standards and workplace procedures
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures and practices, including:
 - hazards associated with switchgear and control gear assembly and installation
 - using risk control measures
- applying sustainable energy principles and practices
- assembling, mounting and connecting control gear and switchgear, including:
 - checking circuits are isolated
 - making connection without damaging switchgear/control
 - making interconnections
 - mounting and wiring switchgear and control gear
 - selecting and placing switchgear and control gear in accordance with industry standards, wiring and schematic diagrams
- checking tools, equipment and testing devices for correct operation and safety
- completing workplace documentation
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- inspecting and checking installation of assembled control gear and switchgear
- using problem-solving techniques when determining the nature of a fault 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:

- assembly instructions, including industry standards, wiring and schematic diagrams
- cable labelling and numbering, including:
 - cable labelling/identification
 - component labelling/identification
 - use of terminal strips to assist fault finding
- choice of switchgear and control gear, including:
 - current ratings
 - overload and fuse settings
 - voltage ratings
- other considerations, including:
 - earthing
 - size of power and control circuit conductors
 - equipment layout methods and accessories
- component layout, including:
 - interconnecting plugs and sockets
 - placement/layout of control circuit devices and components
 - placement/layout of power circuit devices and components
 - segregation of cables at different voltages
 - wiring and schematic diagrams
- equipment layout, methods and accessories
- problem-solving techniques including quality checks
- relevant electrical and WHS/OHS regulations and legislation requirements
- relevant manufacturer specifications
- relevant workplace documentation
- relevant workplace policies and procedures
- risk mitigation processes include safety issues associated with switchgear and control gear assembly and installation
- sustainable energy principles and practices
- switchgear and control gear mounting and wiring techniques, including switchboard testing
- techniques to check if circuits are isolated
- tools, equipment and measuring devices
- types of switchgear and other equipment, including:
 - air-break
 - bus bars and cleats
 - bus ties
 - circuit breakers
 - contactors
 - fuses
 - interlock devices
 - load break switches

- motor starters
- oil type
- relays
- switch fuses
- transformers
- variable speed drives (VSDs).

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 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, equipment (including control panels) and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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