



Australian Government

UEEEL0059 Plan low voltage switchboard and control panel layouts

Release: 2

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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 plan low voltage (LV) switchboard and control panel layout.

It includes preparing and planning the layout of electrical switchboards and control panel operating at voltages up to 1,000 volts (V) alternating current (a.c.) or 1,500 V direct current (d.c.) and fault levels not exceeding 20 kiloamps (kA) for approval.

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

UEEEL0018 Select wiring systems and cables for low voltage general electrical installations

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

UEEEL0021 Solve problems in electromagnetic devices

UEEEL0008 Evaluate and modify low voltage heating equipment and controls

UEEEL0009 Evaluate and modify low voltage lighting circuits, equipment, and controls

UEEEL0010 Evaluate and modify low voltage socket outlets circuits

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

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to plan switchboard and control panel layout

2 Plan switchboard and control panel layout

PERFORMANCE CRITERIA

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

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|------------|--|
| 1.1 | Work health and safety (WHS)/occupational health and safety (OHS) risk control measures and workplace procedures for carrying out work activities are identified, obtained and applied |
| 1.2 | Scope of switchboard and control panel layouts is determined from job specifications and/or design brief |
| 1.3 | Switchboard and control panel layout safety and regulatory requirements are identified, obtained and applied in accordance with WHS/OHS requirements and relevant industry standards |
| 1.4 | Equipment to be incorporated in the switchboard and control panel is determined from job specifications and/or design brief |
| 2.1 | WHS/OHS risk control measures and workplace procedures for carrying out work activities are documented |
| 2.2 | Equipment is selected in accordance with technical standards, job specifications and requirements |
| 2.3 | Switchboard and control panel layouts are planned to |

- accommodate equipment with sufficient clearance to enable wiring/connecting and servicing from job specifications
- 2.4 Switchboard and control panel layouts are planned in accordance with WHS/OHS and relevant industry standards
 - 2.5 Switchboard and control panel layout draft is checked with the design brief and in accordance with relevant industry standards
 - 2.6 Switchboard and control panel layout is documented for submission to appropriate person/s for acceptance and approval
 - 2.7 Unplanned situations are responded to in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- 3 Obtain approval for switchboard and control panel layout**
- 3.1 Requests for alterations to the layout are negotiated with appropriate person/s in accordance with workplace procedures
 - 3.2 Final layout design is documented and approval obtained from appropriate person/s
 - 3.3 Switchboard and control panel layout documentation is forwarded to appropriate person/s for production
 - 3.4 Quality of work is monitored in accordance with workplace procedures

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.

Switchboard must be in more than one section and comprise essential and general supply

- current transformer (CT) metering
- sub-main controls

controls, including:

- local distribution board
- load monitoring
- fault indication

Control panel must consist of controls for more than two electrical machines, electromechanical and/or electronic control devices, including:

- relays
- timers
- logic controllers
- indicators
- switches/push buttons

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG128A Plan low voltage switchboard and control panel layouts.

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 UEEEL0059 Plan low voltage switchboard and control panel layouts

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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 one occasion and include:

- developing outlines of alternative layouts
- selecting equipment that complies with safety and functional requirements and budget limitations
- developing the layout within the safety and functional requirements and budget limitations
- successfully negotiating layout alteration requests
- obtaining approval for final layout design
- documenting layout and equipment specifications clearly
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- following quality procedures
- preparing and planning switchboard and control panel layouts.

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:

- switchboard/control panel planning, including:
 - electrical metering arrangements encompassing:
 - purpose, types and applications
 - metering equipment
 - arrangements for metering
 - switchgear/control gear encompassing:
 - types and applications
 - operating principles

- interlocking systems
- control and protection
- installation requirements
- control panel wiring encompassing:
 - equipment layout methods and accessories
 - connection identification methods
 - wiring techniques
- problem-solving techniques
- relevant industry standards
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications and operating instructions for tools and equipment
- relevant tools, equipment, resources and materials
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures
- relevant workplace quality procedures.

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 simulated suitable 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 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

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