



Australian Government

UEEEL0038 Design switchboards rated for high fault levels (greater than 400 A)

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 design switchboards rated for high fault levels (greater than 400 ampere (A)).

It includes preparing and developing switchboard design and obtaining approval for switchboard design. It also includes designing schemes for protection of persons and property; correct functioning and compatibility with the supply; and arrangement of circuits. It also includes determination of fault levels, effective switchgear, control gear, and protection against over-current, over and under-voltage, and wiring based on calculations to meet required safety and performance standards and functional requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEEEL0059 Plan low voltage switchboard and control panel layouts

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

and

UEEEL0062 Provide engineering solutions to problems in complex polyphase power circuits

UEECD0036 Provide engineering solutions for problems in complex multiple path circuit

UEECD0039 Provide solutions to basic engineering computational problems

and

UEECD0041 Solve electrotechnical engineering problems

or

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

UEEEL0021 Solve problems in electromagnetic devices

or

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

UEEEL0021 Solve problems in electromagnetic devices

or

UEEEC0074 Troubleshoot resonance circuits in an electronic apparatus

Competency Field

Electrical

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

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| 1 Prepare to design switchboards | 1.1 Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for a given work area are identified, obtained and applied |
| | 1.2 Scope of the switchboard is identified from design brief |
| | 1.3 Switchboard safety and regulatory requirements are identified, obtained and applied |
| | 1.4 Design development work is planned in consultation with relevant person/s involved with the work to meet scheduled timelines |
| 2 Develop switchboard design | 2.1 Relevant performance standards, compliance methods and electrical equipment are applied to switchboard design in accordance with relevant industry standards |
| | 2.2 Alternative switchboard design/s is developed in accordance with the design brief |
| | 2.3 Safety, functional and budgetary considerations are incorporated in switchboard design |
| | 2.4 Switchboard design draft is checked in accordance with design brief and relevant industry standards |
| | 2.5 Switchboard design is documented for submission to relevant person/s for acceptance and approval |
| | 2.6 Unplanned situations are dealt with in accordance with workplace procedures |
| 3 Obtain approval for installation design | 3.1 Switchboard design is documented and presented to client representative and/or relevant person/s |
| | 3.2 Requests for alterations to the design are negotiated with relevant person/s in accordance with workplace procedures |
| | 3.3 Final design is documented and approval obtained from relevant person/s |
| | 3.4 Quality of work is monitored in accordance with workplace procedures and relevant industry standards |

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.

Designing a > (greater than) 400 A three phase, 20 kilowatt (kw) fault level switchboard must include at least the following:

- control for essential and general supply
- metering
- sub-main controls
- local final sub-circuit distribution board
- fault indicators

Unit Mapping Information

This unit replaces and is equivalent to UEENEEG130A Design switchboards rated for high fault levels (greater than 400 A).

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>