



Australian Government

Assessment Requirements for 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.

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 designs
- developing the design within the safety and functional requirements and budget limitations
- documenting and presenting design effectively
- successfully negotiating design alteration requests
- obtaining approval for final design
- dealing with unplanned events
- applying performance standards, compliance methods and electrical equipment to switchboard design
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- consulting with relevant person/s in planning design work
- identifying scope of switchboard design brief
- monitoring quality of work
- planning to meet scheduled timelines
- preparing to design switchboards.

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 design of low voltage (LV) switchboards rated for high fault currents, including:
 - trade calculations encompassing:
 - mathematical techniques
 - relevant calculations
 - linear measurement, areas, volumes and ratios

- engineering mechanics encompassing:
 - base physical quantities
 - concepts, principles, International System of Units (SI) units, their applications in engineering calculations in relation to physical quantities and associated formulae
 - mass, velocity, acceleration, force, weight, density and angles
 - energy/work/power
 - moments/torque
 - centre of gravity
 - mechanical advantage
 - levers
 - pulley blocks
 - efficiency
 - friction
 - vectors
 - resolution of forces
 - forces in strung conductors
 - forces on poles and towers
 - determination of sag
 - pressure/stress
 - elementary fluid mechanics
- engineering materials encompassing:
 - classification
 - ferrous and non-ferrous metals
 - steels and alloys
 - properties
 - tensile strength
 - temperature and expansion in metals
 - stress and strain
 - ductility
 - applications
 - corrosion
 - galvanic corrosion
 - hardwoods and soft woods
- fault current calculations encompassing:
 - calculation of fault currents
 - calculation/determination of positive, negative and zero sequence impedances
 - determination of fault current breaking and let-through energy capacities of protection devices
 - the influence of fault/arc impedances
 - impedances operative for phase-to-phase and phase-to-earth faults

- calculation of fault currents for phase-to-phase and phase-to-earth faults
- approximation calculations by selecting the components with the major impedance
- problem-solving techniques
- relevant manufacturer specifications and operating instructions
- relevant job safety assessments or risk mitigation processes
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace quality, instructions, policies and 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 and equipment currently used in industry
- resources that reflect current industry practices in relation to designing switchboards rated for high fault levels
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet - -

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