



Australian Government

UEERE0010 Design energy management controls for electrical installations in buildings

Release: 1

UEERE0010 Design energy management controls for electrical installations in buildings

Modification History

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 energy management controls for electrical installations in new buildings/structures.

It includes designing and developing energy management control methods to reduce energy use in new buildings/structures, and documenting strategies to effectively reduce energy use in the completed installation.

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

Pre-requisite Unit

UEERE0013 Develop strategies to address environmental and sustainability issues in the energy sector

Competency Field

Renewable Energy

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

- 1 Identify energy management techniques for electrical installations in buildings**

PERFORMANCE CRITERIA

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

- 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 Hazards are identified, WHS/OHS risks assessed, and control measures and workplace procedures are implemented in preparation for work
 - 1.3 Scope of the energy management electrical design is determined from specifications of building and its services, plant and machinery and in consultation with relevant person/s
 - 1.4 Advice is sought from allied trade areas and component suppliers on required energy usage and system design in accordance with manufacturer specifications on energy usage for electrical control system
 - 1.5 Advice is sought from work supervisor to ensure work is coordinated effectively with relevant person/s
 - 1.6 Tools, testing devices and materials needed to carry out work are obtained and checked for correct operation and safety
- 2 **Design energy management controls for electrical installations**
 - 2.1 WHS/OHS risk control measures and workplace procedures for carrying out work are followed
 - 2.2 Inspection, tests and measurements are carried out in accordance with WHS/OHS requirements and workplace procedures
 - 2.3 Energy use of building services, plant and machinery is obtained and applied to the energy management design control process
 - 2.4 Energy evaluation tests are set up in accordance with inspection and test methods and workplace procedures
 - 2.5 Strategies to reduce electrical system energy use without compromising occupancy standards are developed in accordance with energy management techniques and evaluation test results
 - 2.6 Unexpected situations are dealt with safely and effectively in accordance with workplace procedures and approval relevant person
 - 2.7 Design and electrical installation evaluation is carried out without unnecessary damage to systems circuits, the surrounding environment or services using sustainable energy practices

- | | |
|---|---|
| 3 Document energy management strategies to effectively reduce energy use in building | 3.1 WHS/OHS work completion risk control measures and workplace procedures are followed |
| | 3.2 Worksite is cleaned and made safe in accordance with workplace procedures |
| | 3.3 Results of energy management design controls, recommended electrical installation strategies and their criterion for energy reduction are documented in accordance with workplace procedures |
| | 3.4 Plans, wiring diagrams and specifications are completed and forwarded to relevant person/s |

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 energy management controls for electrical installations in buildings must include at least the following:

- two building types

Unit Mapping Information

This unit replaces and is equivalent to UEENEEK146A Design energy management controls for electrical installations in buildings.

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 UEERE0010 Design energy management controls for electrical installations in buildings

Modification History

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 includes:

- determining the extent of the design
- setting up and conducting appropriate examinations and tests
- reporting evaluation including recommendation for improving energy efficiency
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- designing energy management controls for electrical installations in buildings/structures
- preparing to design energy management controls for electrical installations in buildings/structures.

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:

- building management control systems, including:
 - functions of a building management system (BMS) encompassing:
 - autonomous functions
 - input/output (I/O)
 - general I/O
 - installation management items
 - energy management
 - risk management
 - information processing
 - objectives
 - building running costs
 - smoke control as per AS 1668.1 The use of ventilation and air conditioning in

- buildings Fire and smoke control in buildings
- BMS hardware encompassing:
 - system architecture
 - communication devices
 - substations
 - personal computers
 - interfaces with other systems
- I/O functions encompassing:
 - digital I/O
 - digital output with status feedback
 - analogue I/O
 - sensors
 - alarms
- energy management encompassing:
 - night cycle
 - optimum stop/start
 - time and event programs
 - night purge
 - outside air percentage control
 - enthalpy control
 - power demand control
 - duty cycle
 - presence detection
 - lighting control
- information processing functions encompassing:
 - computer systems
 - central system management
 - programs
 - system configuration and security
 - operator - machine interface
 - data points
- risk and maintenance management encompassing:
 - system files
 - fire and intruder control
 - access control
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace 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 other simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry
- resources that reflect current industry practices in relation to designing energy management controls for electrical installations in buildings
- 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>