



Australian Government

UEERA0039 Evaluate and report on building services energy management systems

Release: 1

UEERA0039 Evaluate and report on building services energy management systems

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 evaluate and report on building services energy management systems, plant and machinery.

It includes working safely, setting up and conducting evaluation measurements, evaluating energy use from measured parameters, and reporting results, including recommending any resulting corrective actions.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, skills and knowledge described in this unit require a relevant contract of training, such as an Australian Apprenticeship.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

Permits may also be required for some work environments, such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

Pre-requisite Unit

UEERA0094 Verify functionality and compliance of refrigeration and air conditioning installations

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

UEECD0016 Document and apply measures to control WHS risks associated with electrotechnology work

UEERA0059 Prepare and connect refrigerant tubing and fittings

UEERA0036 Establish the basic operating conditions of vapour compression systems

UEERA0035 Establish the basic operating conditions of air conditioning systems

UEERA0050 Install refrigerant pipe work, flow controls and accessories

UEERA0081 Select refrigerant piping, accessories and associated controls

UEERA0031 Diagnose and rectify faults in air conditioning and refrigeration control systems

UEERA0092 Solve problems in low voltage refrigeration and air conditioning circuits

UEERL0005 Locate and rectify faults in low voltage (LV) electrical equipment using set procedures

UEERL0004 Disconnect - reconnect electrical equipment connected to low voltage (LV) installation wiring

UEERL0001 Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply

UEERL0002 Attach cords, cables and plugs to electrical equipment for connection to 1000 V a.c. or 1500 V d.c.

Competency Field

Refrigeration and air-conditioning

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to evaluate and report on energy management

PERFORMANCE CRITERIA

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

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| 1.1 | WHS/OHS procedures are obtained and implemented in accordance with workplace procedures |
| 1.2 | WHS/OHS risk control measures and procedures for work are followed |
| 1.3 | The extent of evaluation is determined from building services, plant and machinery specifications and discussed with relevant person/s |
| 1.4 | Advice is sought from work supervisor to ensure work is coordinated effectively with others |

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|--------------------------------------|------------|--|
| | 1.5 | Tools, testing devices and materials required for the work are obtained and checked for correct operation and safety in accordance with workplace procedures |
| 2 Evaluate energy management | 2.1 | WHS/OHS risk control measures and workplace procedures for carrying out the work are followed |
| | 2.2 | Need to test or measure live work is determined in accordance with workplace procedures and WHS/OHS requirements |
| | 2.3 | Energy management of building services, plant and machinery is applied to the evaluation process |
| | 2.4 | Energy evaluation tests for each parameter under scrutiny are conducted in accordance with workplace procedures and test methods |
| | 2.5 | Energy evaluation tests are conducted methodically and results/comments systematically noted |
| | 2.6 | Unplanned situations are dealt with safely with the approval of authorised person/s |
| | 2.7 | Evaluation is conducted without damage to systems, circuits, the surrounding environment and/or services using sustainable energy practices |
| 3 Report on energy management | 3.1 | WHS/OHS work completion risk control measures and procedures are followed |
| | 3.2 | Worksite is cleaned and made safe in accordance with workplace procedures |
| | 3.3 | Results of energy management evaluation, including recommendations and justification for improvements, are documented |
| | 3.4 | Energy evaluation report is forwarded to appropriate person/s 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.

Evaluating and reporting on building services energy management systems must include at least the following

- two different types of building services, plant and machinery

Unit Mapping Information

This unit replaces and is equivalent to UEENEEJ136A Evaluate and report on building services energy management systems.

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 UEERA0039 Evaluate and report on building services energy management systems

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 include:

- determining the extent of the evaluation
- setting up and conducting appropriate examinations and tests
- reporting evaluation, including recommendation for improving energy efficiency
- dealing with unplanned events
- applying environmental and sustainable energy principles and practices
- applying relevant legislations, industry standards, codes of practice and regulations
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - applying safe working practices
 - hazard identification and reporting
 - implementing risk control measures
- determining need to test or measure live work
- implementing energy management procedures for a building
- performing energy evaluation tests
- preparing to evaluate and report on energy management.

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:

- energy management fundamentals, safe working practices and relevant standards, codes and regulations, including:
 - typical energy sources and characteristics:
 - supply authorities
 - standard units of measurement
 - electricity
 - steam

- hot water
- high temperature hot water
- town gas
- liquefied petroleum gas (LPG)
- solar
- waste heat
- petrol
- diesel
- energy usage:
 - office lighting
 - air conditioning systems
 - refrigeration systems
 - security systems
 - computer systems
 - standby/emergency systems
 - lifts and escalators
- energy auditing process:
 - energy costs and tariffs
 - energy consumption
 - predicting future costs
 - plotting consumption trends
 - historical data
 - collecting information using surveys
 - comparisons of actual to recorded usage
 - energy balance
 - instrumentation
 - building management systems
 - estimating savings potential
- system operation for energy efficiency:
 - types of systems
 - efficiency in building structures
 - operation of a vehicle fleet
 - proportion total energy consumption against individual systems
 - passive building design
 - preventative maintenance procedures
 - monitoring building management systems
 - operation of major and minor plant
 - inappropriate energy management procedures
 - building plant control systems

- Australian Standards/local authority requirements
- case studies
- implementing energy management procedures for a building:
 - recording base year data
 - climatic conditions for locality
 - establishing energy costs and tariffs
 - building and systems surveys
 - payback period
 - survey analysis
 - energy conservation procedures
 - informing stockholders
 - recommendations and documentation
 - implementation issues
 - monitoring, evaluation and follow up
- building management systems
- building management systems, safe working practices and relevant standards, codes and regulations, including:
 - functions of a building management system:
 - autonomous functions
 - input/output (I/O)
 - general I/O
 - installation management items
 - energy management
 - risk management
 - information processing
 - objectives
 - building running costs
 - smoke control in accordance with AS 1668.1 The use of ventilation and air conditioning in buildings - Fire and smoke control in buildings
 - building management system hardware:
 - system architecture
 - communication devices
 - substations
 - personal computers
 - interfaces with other systems
 - input and output functions:
 - digital I/O
 - digital output with status feedback
 - analogue I/O
 - sensors

- alarms
- energy management:
 - 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:
 - computer systems
 - central system management
 - programs
 - system configuration and security
 - operator - machine interface
 - data points
- risk and maintenance management:
 - system files
 - fire and intruder control
 - access control
- building services, plant and machinery specifications
- energy evaluation tests
- relevant manufacturer specifications
- relevant tools, equipment and testing devices
- relevant WHS/OHS legislated requirements, including:
 - environmental and sustainable energy principles and practices
- 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 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 and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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