Assessment Requirements for UEERA0039 Evaluate and report on building services energy management systems

Release: 1

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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

Companion Volume implementation guides are found in VETNet - - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6