



Australian Government

MEM23148A Develop energy management solutions

Release 1

MEM23148A Develop energy management solutions

Modification History

Release 1 (MEM05v9).

Unit Descriptor

This unit of competency covers the skills and knowledge required to develop energy management solutions. This includes performing a complete energy audit of a large commercial or industrial building and making recommendations on reducing energy usage.

Application of the Unit

The unit applies to heating, ventilation, air conditioning and refrigeration (HVAC/R) technicians who are required to investigate, advise and report on energy management solutions. As part of this work the technician may be required to conduct complete energy audits and model and validate solutions to improve energy use.

Licensing/Regulatory Information

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

Pre-Requisites

MEM23004A	Apply technical mathematics
MEM23006A	Apply fluid and thermodynamics principles in engineering
MEM23142A	Apply psychrometric processes and system performance
MEM23143A	Apply energy management principles
MEM23154A	Analyse and service heating, ventilation, airconditioning and refrigeration control systems

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

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

Elements and Performance Criteria

- | | | |
|---|--|---|
| 1 | Prepare for an energy audit | 1.1 Obtain and implement work health and safety (WHS) and environmental requirements for a given work area |
| | | 1.2 Determine procedure for completing an effective building energy audit |
| | | 1.3 Collect data from building distribution diagrams and metering equipment |
| | | 1.4 Ensure appropriate test equipment is maintained and is used correctly |
| | | 1.5 Consult with appropriate personnel are to ensure that work is coordinated effectively with others |
| | | 1.6 Obtain equipment and resources needed for the task in accordance with enterprise procedures |
| 2 | Analyse data and prepare energy use profiles | 2.1 Select suitable energy simulation program for energy audit analysis using appropriate resources |
| | | 2.2 Analyse test data taking into consideration seasonal effects |
| | | 2.3 Prepare building energy use profiles using appropriate equipment |
| | | 2.4 Identify major energy consuming components, their likely profiles and total consumption using enterprise procedures |

- | | | | |
|---|-----------------|-----|--|
| 3 | Model solutions | 3.1 | Determine significant inputs of the simulated results |
| | | 3.2 | Model alternate energy profiles using appropriate equipment to evaluate various components of a building |
| | | 3.3 | Provide solutions to unplanned situations consistent with enterprise procedures |

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- monitoring data of a building management system (BMS)
- implementing energy management procedures for a building
- planning and conducting an energy audit
- using relevant software tools effectively
- interpreting drawings and specifications
- communicating effectively with others
- applying methods of energy conservation
- applying testing and data collection procedures
- determining electrical load control
- operating HVAC/R system control settings
- working in teams and with others
- communicating technical and procedural requirements to others
- dealing effectively with unexpected situations

Required knowledge

Required knowledge includes:

- energy usage within a multi-storey building, including major energy consuming plant
- criteria for determining selection and relevance of data for energy audits
- energy auditing process
- implementing energy management procedures for a building
- BMS attributes, such as functions, hardware, inputs and outputs
- contemporary methods in best practice in managing energy usage

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • implement WHS workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range • demonstrate essential knowledge and skills to carry out an energy audit of a building • demonstrate the competency within a timeframe typically expected of the discipline, work function and industrial environment • demonstrate ability to develop performance energy management solutions using simulation software and make predictive reports. Competency must be demonstrated for different building sites.
Context of and specific resources for assessment	• This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. • The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge. • Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of process. • Assessment must confirm a reasonable inference that competency is not only able to be satisfied under the particular circumstance, but is able to be transferred

	to other circumstances. • Assessment may be in conjunction with assessment of other units of competency where required.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

WHS requirements	WHS requirements include: • legislation • protective equipment • material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures • awards provisions
Environmental requirements	Environmental requirements include: • relevant legislation, regulations and codes • correct handling and disposal of liquid and solid waste • elimination or minimisation of gas, fume, vapour and smoke emissions, including fugitive emissions • dust elimination, minimisation and control • minimisation of energy and water use • elimination or control of excessive noise • use and recycling of refrigerants
Appropriate personnel	Appropriate personnel may include: • supervisor • leading hand • foreman • manager • engineer • technician

	• trainer • mentor • team member • customer • client
Resources	Resources may include: • energy management software • data from suitable building energy management systems • seasonal variation data
Enterprise procedures	Enterprise procedures may include: • the use of tools and equipment • instructions, including job sheets, plans, drawings and designs • reporting and communication • manufacturer specifications • operational procedures • industry standards
Equipment	Equipment may include: • computer workstation and software, either stand alone or networked • test apparatus • appropriate tools of trade, equipment and materials

Unit Sector(s)

Competency field

Unit sector Engineering science

Custom Content Section

Not applicable.