



Australian Government

MEM23148 Develop energy management solutions

Release: 1

MEM23148 Develop energy management solutions

Modification History

Release 1. Supersedes and is equivalent to MEM23148A Develop energy management solutions.

Application

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

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

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

Pre-requisite Unit

MEM23004 Apply technical mathematics

MEM23006 Apply fluid and thermodynamics principles in engineering

MEM23142 Determine psychrometric processes and system performance

MEM23143 Apply energy management principles

MEM23154 Analyse and service HVACR systems

Competency Field

Engineering science

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for an energy audit	1.1 Obtain and implement work health and safety (WHS) and environmental requirements for the work area 1.2 Determine procedure for completing an effective building energy audit 1.3 Collect data from building distribution diagrams and metering

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	equipment 1.4 Ensure appropriate test equipment is maintained and is used in a correct manner 1.5 Consult with appropriate personnel to ensure that work is coordinated effectively with others 1.6 Obtain equipment and resources needed for the task in accordance with organisational 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 organisational 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 organisational procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

WHS requirements	- legislation - protective equipment
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include:	• material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures • awards provisions.
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 include:	• supervisor, leading hand, foreman or manager • engineer • technician • trainer or mentor • team member • customer.
Resources include:	• energy management software • data from suitable building energy management systems • seasonal variation data.
Organisational procedures 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 includes:	• computer workstation and software, either stand alone or networked • test apparatus • appropriate tools of trade, equipment and materials.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM23148A Develop energy management solutions.

Links

Companion Volume Implementation Guides are available on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM23148 Develop energy management solutions

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- identifying and interpreting drawings and specifications appropriate to developing energy management solutions
- implementing work health and safety (WHS) procedures and practices, including the use of risk control measures
- demonstrate the use of software tools related to carrying out an energy audit of a building
- monitoring data of a building management system (BMS) and implementing energy management procedures for a building on at least two occasions
- planning and conducting an energy audit on at least two occasions, applying testing and data collection procedures and applying methods of energy conservation
- determining electrical load control and adjusting heating, ventilation, air conditioning and refrigeration (HVACR) system control settings on at least two occasions
- communicating technical and procedural requirements to others
- dealing with unexpected situations.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- WHS requirements
- appropriate personnel to consult
- 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 including functions, hardware, inputs and outputs
- contemporary methods in best practice in managing energy usage
- environmental requirements
- organisational procedures
- resource and equipment requirements.

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Assessment Conditions

- Assessors must:
 - have vocational competency in developing energy management solutions at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- 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.
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