Australian Government

MEM234016 Design refrigeration systems

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM234016A Design refrigeration systems.

Application

This unit of competency defines the skills and knowledge required to design industrial or commercial refrigeration systems and system components that comply with safety and regulatory requirements. This includes systems with multiple evaporators and compressors, moderate and low temperature, indirect refrigeration and flooded systems, commercial refrigeration and food storage technology.

The unit applies to the design of refrigeration systems across all forms of manufacturing and engineering and design activities can also include reverse engineering, design rectification or modifications of an existing design. It is suitable for refrigeration system contractors, heating, ventilation, air conditioning and refrigeration (HVACR) consultants, designers and maintenance personnel.

Individuals completing this work either already have or are developing skills and experience in the application of HVACR principles, evaluation of HVACR systems and thermal loads, mathematics and computer.

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

Pre-requisite Unit

Nil

Competency Field

Engineering science

Elements and Performance Criteria

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Clarify the design task and elaborate the specification	1.1 Establish required features of refrigeration system and system components in consultation with client 1.2 Determine parameters of the brief or contract 1.3 Determine stakeholders to be consulted in design process 1.4 Assess work health and safety (WHS), regulatory, sustainability or

Elements	Performance Criteria
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
	environmental issues relevant to design task 1.5 Confirm design brief, including budget and schedule, and provide preliminary advice on feasibility
2. Prepare concept proposal	2.1 Use investigation and analysis to define refrigeration systems and system components performance parameters 2.2 Carry out required modelling, simulations and calculations using appropriate techniques, software and validation techniques 2.3 Generate refrigeration system solutions that respond to the brief or contract 2.4 Check feasibility and evaluate solutions against design criteria, ensuring conformity to WHS, regulatory, sustainability and environmental requirements 2.5 Review concept proposals with client and select preferred solution
3. Design refrigeration system	3.1 Finalise selected refrigeration system design 3.2 Provide documentation, drawings, specifications and instructions 3.3 Consult and negotiate with clients and stakeholders to obtain sign-off on design 3.4 Monitor installation and commissioning with stakeholders, and make any necessary modifications

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.	
Refrigeration systems and	• industrial systems with multiple evaporators and compressors • moderate and low temperature

components include:	• indirect refrigeration and flooded systems • commercial refrigeration and food storage technology • compliance with safety and regulatory requirements.
Parameters of the brief include:	• the design of new equipment or fault analysis, rectification or modification to an existing design • determination of the degree of innovation and creativity expected by the client • design process limits and budgets • product cost limits and budgets • performance specifications • equipment availability, capacities and restrictions • specified administrative, communication and approval procedures • other special features and limits in the design brief.
WHS, regulatory, sustainability and environmental issues include:	• WHS acts, regulations and relevant standards • industry codes of practice • risk assessments • registration requirements • safe work practices • minimising ecological and environmental footprint of process, plant and product • maximising economic benefit of process plant and product to the organisation and the community • minimising the negative WHS impact on employees, community and customer • state and territory regulatory requirements.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM234016A Design refrigeration systems.

Links

Companion Volume Implementation Guides are available on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2