Australian Government

MEM23144 Contribute to the design of a commercial refrigeration system

Release: 1

MEM23144 Contribute to the design of a commercial refrigeration system

Modification History

Release 1. Supersedes and is equivalent to MEM23144A Contribute to the design of a commercial refrigeration system.

Application

This unit of competency defines the skills and knowledge required to contribute to the design of commercial refrigeration systems or to undertake the complete design for less complex systems. It includes applying refrigeration and food storage technology, using standard manufactured components and piping, following design specifications, documenting system design and complying with safety and regulatory requirements.

The unit applies to technicians in organisations that design commercial refrigeration equipment and applies to team situations where the technician can be working with engineers and other technicians from heating, ventilation, air conditioning and refrigeration (HVACR) and other disciplines on large design projects as well as individual design work that is within the scope of the technician's skill and knowledge.

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

MEM23129 Evaluate thermal loads for heating, ventilation, air conditioning and refrigeration

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. Determine optimum system design for application	1.1 Obtain and implement work health and safety (WHS) and environmental requirements for the work area 1.2 Consult appropriate personnel to determine system specifications and obtain final confirmation in accordance with organisational

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	procedures 1.3 Plan design development work to meet scheduled timelines in consultation with others involved on the worksite
2. Design system	2.1 Design system taking into account safety, regulatory requirements, relevant standards, system specifications and budgetary constraints 2.2 Determine selected equipment required for the systems and locations in accordance with the design specifications and organisational procedures 2.3 Check system design draft for compliance with the design brief, regulatory requirements and environmental standards 2.4 Document, validate and approve system design in accordance with organisational procedures 2.5 Consult as appropriate on any design adjustments required to meet contingencies and unexpected situations
3. Validate system performance	3.1 Establish operating criteria for expected ambient conditions 3.2 Determine and validate likely operating characteristics for refrigeration load against design specifications and standards 3.3 Adjust the functional design and remap operating characteristics to achieve optimal system performance 3.4 Program the control system to meet operational requirements 3.5 Document the designed system and its validation in accordance 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 include:	• legislation • protective equipment • 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.
Industry standards include:	• AS/NZS ISO 817 Refrigerants - Designation and safety classification • AS/NZS 3666.1 Air-handling and water systems of buildings - Microbial control, Part 1: Design, installation and commissioning • AS/NZS 3666.2 Air-handling and water systems of buildings - Microbial control, Part 2: Operation and maintenance • AS/NZS 3666.3 Air-handling and water systems of buildings - Microbial control, Part 3: Performance-based maintenance of cooling water systems • Ozone Protection regulations • International Institute of Ammonia Refrigeration (IIAR) Ammonia Data Book • American National Standards Institute (ANSI) and International Institute of Ammonia Refrigeration (IIAR) standards • American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) and Mechanical Refrigeration standards.
Organisational procedures include:	• use of tools and equipment • instructions, including job sheets, plans, drawings and designs • reporting and communication • manufacturer specifications

	• operational procedures • industry standards.
Design requirements of commercial refrigeration systems include:	• selecting standard manufactured components and piping • adhering to design specifications • documenting system design • complying with safety and regulatory requirements.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM23144A Contribute to the design of a commercial refrigeration system.

Links

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