



Australian Government

CPCPMS4011 Design, size and lay out heating and cooling systems

Release: 1

CPCPMS4011 Design, size and lay out heating and cooling systems

Modification History

- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
- Supersedes and is equivalent to CPCPMS4011B Design, size and lay out heating and cooling systems. Updated to meet the Standards for Training Packages 2012.

Application

This unit specifies the skills and knowledge required to design, size and document the layout of heating and cooling systems for multi-floor structures.

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-requisite Unit

Nil.

Unit Sector

Plumbing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

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|---------------------------------|--|
| 1 Identify system requirements. | 1.1 Access, read and determine heating and cooling installation requirements from job specifications, relevant Australian Standards, codes, manufacturer's specifications and jurisdictional requirements. |
| | 1.2 Identify and apply workplace policies and procedures, work health and safety (WHS) and environmental requirements. |
| | 1.3 Determine quantity, location, fixtures and legal points of discharge. |

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| 2 Design and size system layout. | 2.1 Review building drawings plans and specifications to determine heating and cooling requirements. |
| | 2.2 Perform sizing of air conditioning or small-bore heating system to provide for required heating and cooling load and to determine required piping and ducting. |
| | 2.3 Produce final system layout plans according to job specifications, relevant Australian Standards, codes, manufacturer's specifications and jurisdictional requirements. |

Foundation Skills

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

Unit Mapping Information

Supersedes and is equivalent to CPCPMS4011B Design, size and lay out heating and cooling systems.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCPMS4011 Design, size and lay out heating and cooling systems

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Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria for this unit by:

- designing, sizing and documenting the layout details of a domestic heating and cooling system requiring a minimum heat load of 150 megajoules (MJ) per hour
- designing, sizing and documenting the layout details of a commercial heating and cooling system for a structure with at least four floors.

The performance applies to:

- ducting systems for air conditioning, heating or ventilation purposes in buildings Class 1 or 2 with a maximum static pressure of 0.75 kPa and a maximum velocity of 12.5 metres per second
- piping systems conveying heating and chilled water operating at a maximum pressure of 700 kPa or a maximum temperature of 100°C
- systems having a maximum output of 50 kW and total air quantities not exceeding 950 litres per second.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- principles, operation and characteristics of heating and cooling systems
- characteristics and application of different fixing and joining techniques and methods
- characteristics and application of pipe and ducting systems, including their fittings and fixture supports and fixing and joining techniques
- design concepts and performance measures for heating and cooling systems
- effective isolation processes and procedures
- electrical and electronic principles and safety requirements
- process of designing, sizing and documenting the layout of heating and cooling systems
- properties of water and air, including pressure and flow rates
- air conditioning systems:

- evaporative cooling system
- hydronic heating system
- hydronic cooling system
- warm air system
- refrigerated air conditioning system
- small-bore heating systems:
 - boilers
 - piping
 - radiators
- design materials:
 - use of computers and relevant computer-aided design (CAD) software
 - drafting materials and equipment
 - relevant structure plans and specifications
- how to access relevant information, including codes and standards
- tools, materials and equipment used to design, size and document the layout of heating and cooling systems
 - work health and safety (WHS) requirements for designing, sizing and documenting the layout of heating and cooling systems.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Links

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