



Australian Government

Assessment Requirements for CPCPMS5011 Design air conditioning and ventilation systems

Release: 1

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Modification History

- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
- Supersedes and is equivalent to CPCPMS5011A Design air conditioning and ventilation systems. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

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

- designing, sizing and documenting the layout details for an air conditioning and ventilation system for a 10-storey residential building with ground floor commercial premises and basement car park and include:
 - air conditioning units
 - ducting systems
 - controls
 - fans
 - zones.

Knowledge Evidence

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

- methods of determining scope of work by:
 - interpreting plans and specifications
 - reviewing sizing and documenting layout for air conditioning and ventilation systems, including residential and commercial systems
 - analysing new projects or an existing structure being renovated, extended, restored or maintained
- design requirements:
 - architectural plans
 - building specifications
 - fire safety
 - the National Construction Code (NCC)
 - owners
 - tenants

- air-flow requirements and sizing of duct work
- specific use conditions:
 - age and activity of occupants
 - computer requirements
 - food preparation
 - smoke exhaust
 - wet-bulb and dry-bulb temperature and humidity
- psychrometric evaluation:
 - absolute, specific and relative humidity
 - air composition
 - air properties:
 - density
 - expansion coefficient
 - kinematic viscosity
 - Prandtl number
 - specific heat
 - temperature
 - thermal conductivity
- altitude, density and volume
- determination of the air condition using a psychrometric or Mollier chart, showing:
 - dewpoint temperature
 - dry-bulb temperature
 - enthalpy
 - humidity ratio
 - relative humidity
 - specific volume
 - wet-bulb temperature
- assessment of factors affecting heat load:
 - building materials
 - insulation
 - number of personnel
 - number of windows
 - room dimensions
 - usage
 - weather effects
 - using:
 - calculations and computer software systems
 - heat load calculation methods and formulas
- building heat losses:
 - construction materials

- insulation materials
- maintaining plenum
- occupancy
- room sizes
- legislation, standards and other relevant documentation according to Commonwealth, state and territory legislation and regulations relating to:
 - growth and distribution of Legionella pneumophila bacteria and other water and airborne infectious bacterial agents
 - handling of materials, including hazardous materials and substances
 - hazard control
 - organic and inorganic contaminants
- quality assurance requirements, including:
 - AS 1100 Technical drawing materials
 - AS/NZS 1668 The use of ventilation and air-conditioning in buildings Set
 - AS/NZS ISO 817:2016 Refrigerants – Designation and safety classification
 - AS/NZS 5149 Refrigerating systems and heat pumps – Safety and environmental requirements - Parts 1 to 4
 - AS/NZS 3666 Air-handling and water systems of buildings microbial control - Parts 1 to 4
 - Environment Protection Authority (EPA)
 - internal company quality assurance policy and risk management strategy
 - International Standards Organisation (ISO)
 - site safety plan
 - workplace operations and procedures
- specification and operational manual information:
 - commissioning and testing
 - components installation
 - fittings
 - manufacturer specifications, literature and data
 - materials
 - pumps
 - systems
 - valves
- specification:
 - air-flow requirements
 - equipment selection
 - fire safety
 - jointing
 - manufacturer requirements
 - materials

- work health and safety (WHS)
- specialised components
- support
- testing
- workmanship
- plans:
 - axonometric
 - cross-sections
 - details
 - elevations
 - isometrics
 - schematics
 - sections
- plans produced by:
 - computer generation
 - drawing equipment
- design and sizing detail:
 - cost
 - materials and quality of work
 - milestones
 - nominated subcontractors
 - provision of on-site facilities and site access
 - quality assurance
 - space allowances
 - standard procedures
 - work schedules
- design parameters:
 - client requirements
 - legislative requirements
 - WHS requirements
 - user requirements in relation to zoning
 - reference to calculations, tables, regulations and manufacturer specifications
- methods of applying sustainability principles and concepts:
 - selecting appropriate material to ensure minimal environmental impact
 - efficient use of material
 - efficient energy usage
- tests and testing equipment for:
 - air pressure
 - air velocity
 - air volume

- humidity
- pitot tubes
- sound power levels
- temperature
- air flow
- climate control
- defect inspection
- performance quality assurance (QA) audit
- commissioning schedule information:
 - acoustic performance
 - balancing
 - system certification
 - check for foreign material
 - leak check
 - system defects
 - system functions as per design
- operation and maintenance manual information:
 - as installed drawing
 - certification documentation
 - results of commissioning test
 - maintenance schedules
 - manufacturer brochures and technical information
 - regular water quality testing
 - system operation.

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

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>