



Australian Government

CPCPMS3040A Install and maintain evaporative air cooling systems

Release 1

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Modification History

Prerequisite unit changed

Changes to performance criteria, required skills and knowledge, range statement and critical aspects

Not equivalent to CPCPMS3020A

Unit Descriptor

This unit of competency specifies the outcomes required to install and maintain evaporative air cooling systems.

Application of the Unit

Site location for work application may be either domestic or commercial and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

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

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

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|---|-------------------------------------|---|
| 1 | Prepare for work. | <p>1.1 Plans and specifications are obtained.</p> <p>1.2 <i>Work health and safety</i> (WHS) and <i>environmental requirements</i> installing evaporative air cooling systems are adhered to throughout the work.</p> <p>1.3 <i>Quality assurance requirements</i> are identified and adhered to according to workplace requirements.</p> <p>1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work and <i>statutory and regulatory authorities'</i> requirements.</p> <p>1.5 <i>Tools and equipment</i>, including personal protective equipment, are selected and checked for serviceability.</p> <p>1.6 Work area is prepared to support efficient installation and maintenance of evaporative air cooling systems.</p> |
| 2 | Identify installation requirements. | <p>2.1 Quantity and type of materials required for installation are determined from plans and specifications.</p> <p>2.2 <i>Materials</i> are identified, ordered and collected according to workplace procedures.</p> <p>2.3 Requirements for other services are identified and connection is planned according to regulatory requirements.</p> <p>2.4 Materials and equipment are checked for compliance with standards, and docket and order form, and for acceptable condition.</p> |

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|---|------------------------|---|
| 3 | Install and test unit. | <p>3.1 Installation is set out in compliance with plans, specifications and relevant information.</p> <p>3.2 Existing services are located and installation process is adjusted accordingly to avoid any disturbance.</p> <p>3.3 Preparatory work, including installation of piping and isolating valve and roof penetration and flashing, is carried out to specifications without unnecessary damage to surrounding structures or environment.</p> <p>3.4 Structural supports are installed in compliance with plans and specifications and National Construction Code.</p> <p>3.5 Ducting and control panels are installed according to authorities' requirements, plans, specifications and manufacturer recommendations.</p> <p>3.6 System is installed to plans, specifications and manufacturer recommendations.</p> <p>3.7 Installation is tested according to specification, code or standards for the application.</p> <p>3.8 Sustainability principles and concepts are applied throughout the installation and maintenance process.</p> <p>3.9 Test results are documented in required format.</p> |
| 4 | Maintain unit. | <p>4.1 Service and maintenance requirements are identified from manufacturer specifications or authorities' requirements.</p> <p>4.2 Replacement components are checked and fitted periodically and as required according to specification.</p> <p>4.3 Other services to the unit and maintenance operations are conducted, observing manufacturer and authorities' requirements.</p> |

- 5 Clean up.
 - 5.1 Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice, and job specification.
 - 5.2 Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
 - 5.3 Documentation is completed according to workplace requirements.

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
 - access information
 - determine requirements
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - follow instructions
 - report faults
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication, such as hand signals
- literacy skills to:
 - complete workplace documentation
 - document test results
 - read and interpret:
 - documentation from a variety of sources
 - plans and specifications
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
 - plan and sequence tasks with others
 - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
 - identify and accurately report to appropriate personnel any faults in tools, equipment or materials
 - undertake associated penetration and flashing of the roof, provision of water, and installation of required duct work
- technology skills to:
 - access and understand site-specific instructions in a variety of media
 - use mobile communication technology

Required knowledge

- characteristics and application of different assemblies, including fixing and jointing

techniques and methods

- effect of bacteria in water, and health implications
- effective isolation processes and procedures
- job safety analysis (JSA) and safe work method statements (SWMS)
- materials handling techniques
- WHS regulations relevant to the work activity
- personal protective equipment requirements and use
- processes of installing and testing evaporative air cooling systems
- roof penetration and flashing
- SI system of measurement
- statutory requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

A person who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install evaporative units
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications, installing an evaporative air cooling system on a roof, including flashing the roof penetration; installing a plenum box and duct work to three diffusers; connecting cold water to an isolation valve within 1 metre of the appliance; connecting and completing installation testing, and commissioning its operation, ensuring:
 - application of sustainability principles and concepts
 - correct identification of requirements and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completing all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
 - communicating and working effectively and safely with others.

Context of and specific resources

This competency is to be assessed using standard and authorised work practices, safety requirements and

for assessment

environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement
- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace

- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Work health and safety is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
 - hazardous materials and substances
 - identifying and testing for electrical hazards
 - manual handling
 - service lines
 - surrounding structures and facilities
 - trip hazards

- use of tools and equipment
- work site visitors and the public
- working at heights
- working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

Environmental requirements may include:

- clean-up protection
- waste management.

Quality assurance requirements may include:

- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- site safety plan
- workplace operations and procedures.

Statutory and regulatory authorities include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Tools and equipment may include:

- hand and power tools
- ladders
- lifting and load shifting equipment, including:
 - chain blocks
 - elevated work platforms
 - forklifts
 - hand trolleys
 - hoists and jacks
 - rollers
 - scaffolds
- measuring equipment
- roof safety equipment
- test equipment.

Materials may include:

- control panels
- diffusers

- ducting materials
- evaporative air cooling systems
- grills
- insulation.

Information may include:

- charts and hand drawings
- instructions issued by authorised organisational or external personnel
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
 - WHS and environmental requirements
 - plumbing regulations
- relevant Australian standards and building codes
- safe work procedures relating to installing evaporative cooling systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Preparatory work that may need to be completed includes:

- ensuring structural integrity of roof
- installing piping and isolating valve
- installing piping and isolating valve in roof cavity
- installing plinths
- installing structural supports
- installing roof penetration and flashing for the unit.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
 - efficient use of material
 - correct handling of hazardous materials
 - appropriate recycling of material
 - efficient water use
 - efficient energy retention

- reuse of waste water
- selecting appropriate products, components and material to ensure minimal environmental impact.

Other services to units may include:

- electrical connections
- water supply.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.