Australian Government

MEM23142 Determine psychrometric processes and system performance

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM23142A Determine psychrometric processes and system performance.

Application

This unit of competency defines the skills and knowledge required to identify psychrometric processes and determine system performance in a commercial building. It applies to those in organisations designing, manufacturing, installing, servicing or maintaining heating, ventilation, air conditioning and refrigeration (HVACR) equipment.

It is suitable for people working as supervisors, technicians and HVACR draftspersons, and for those pursuing manufacturing engineering or related technical qualifications and careers.

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

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. Review psychrometric processes	1.1 Obtain and implement work health and safety (WHS) and environmental requirements for the work area 1.2 Apply knowledge of psychrometric processes to analytical solutions to HVACR systems in accordance with organisational procedures 1.3 Diagnose air temperature and humidity problems using psychrometric charts 1.4 Consult appropriate personnel to ensure that work is coordinated effectively with others

Elements	**Performance Criteria**
Elements describe the essential *outcomes.*	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
2. Analyse the psychrometric and system performance of HVACR systems	2.1 Determine plant or system capacity and airflow requirements for effects of coil bypass factor, apparatus dew point (ADP) and partial load control 2.2 Calculate dehumidified air quantity using both target superheat (TSH) and effective room sensible heat (ERSH) methods 2.3 Establish plant capacity and air flow rates for the system and/or building 2.4 Establish airside systems and determine system performance 2.5 Determine systemic performance parameters 2.6 Consult on any contingencies and unexpected situations and take appropriate action based on specifications, codes and standards, and organisational procedures
3. Document and report on psychrometric and HVACR system performance	3.1 Evaluate solutions to psychrometric and system performance to determine their effectiveness 3.2 Report and document analysis in accordance with organisational procedures, incorporating details of all findings, calculations and assumptions 3.3 Prepare and justify recommendations for any required actions in relation to HVACR equipment

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	• legislation • protective equipment

include:	• 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.
Systemic performance parameters include:	• coil characteristics • spray processes.
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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM23142A Determine psychrometric processes and system performance.

Links

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