



**Australian Government**

# **MEM234017 Design exhaust, ventilation and dust collection systems**

**Release: 1**

# MEM234017 Design exhaust, ventilation and dust collection systems

## Modification History

Release 1. Supersedes and is equivalent to MEM234017A Design exhaust, ventilation and dust collection systems.

## Application

This unit of competency defines the skills and knowledge required to design commercial and industrial exhaust, ventilation and dust extraction systems in accordance with standards, codes and regulatory requirements. It includes consideration of fluid dynamic principles and selection of system components including ducting, fans and filters.

The client may be internal or external to the designer's organisation.

The unit applies to the design of exhaust, ventilation and dust collection systems across all forms of manufacturing and engineering and design activities and can also include reverse engineering, and design rectification or modifications of an existing design. It is suitable for exhaust, ventilation and dust collection system contractors, consultants, designers and maintenance personnel.

Individuals completing this work either already have or are developing skills and experience in the application of thermodynamic and fluid dynamic principles, mathematics and computer techniques.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

Nil

## Competency Field

Engineering science

## Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Clarify the design task and elaborate the specification	1.1 Establish features and performance parameters of exhaust, ventilation and dust collection plant and equipment, in consultation with the client

<b>Elements</b>	<b>Performance Criteria</b>
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.2 Determine parameters of the brief or contract 1.3 Determine stakeholders to be consulted in design process 1.4 Assess work health and safety (WHS), regulatory, sustainability or environmental issues relevant to design task 1.5 Confirm design brief, including budget and schedule, and provide preliminary advice on feasibility
2. Prepare concept proposal	2.1 Use investigation and analysis to define exhaust, ventilation and dust collection plant and equipment performance parameters 2.2 Carry out required modelling, simulations and calculations using appropriate techniques, software and validation techniques 2.3 Generate exhaust, ventilation and dust collection plant and equipment solutions that respond to the brief or contract 2.4 Check feasibility and evaluate solutions against design criteria ensuring conformity to WHS, regulatory, sustainability and environmental requirements 2.5 Review concept proposals with clients and select preferred solution
3. Design exhaust, ventilation and dust collection system	3.1 Develop selected exhaust, ventilation and dust collection system designs 3.2 Provide documentation, drawings, specifications and instructions 3.3 Consult with client and stakeholders to obtain sign-off on design 3.4 Monitor installation and commissioning with stakeholders, and make any necessary modifications

## 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.	
Parameters of the brief include:	<ul style="list-style-type: none"> <li>• the design of new equipment or fault analysis, rectification or modification to an existing design</li> <li>• determination of the degree of innovation and creativity expected by the client</li> <li>• design process limits and budgets</li> <li>• product cost limits and budgets</li> <li>• performance specifications</li> <li>• equipment availability, capacities and restrictions</li> <li>• specified administrative, communication and approval procedures</li> <li>• other special features and limits in the design brief.</li> </ul>
WHS, regulatory, sustainability and environmental issues include:	<ul style="list-style-type: none"> <li>• WHS acts, regulations and relevant standards</li> <li>• industry codes of practice</li> <li>• risk assessments</li> <li>• registration requirements</li> <li>• safe work practices</li> <li>• minimising ecological and environmental footprint of process, plant and product</li> <li>• maximising economic benefit of process plant and product to the organisation and the community</li> <li>• minimising the negative WHS impact on employees, community and customer</li> <li>• state and territory regulatory requirements.</li> </ul>

## Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM234017A Design exhaust, ventilation and dust collection systems.

## Links

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