



Australian Government

Assessment Requirements for MEM234006 Evaluate and select thermodynamic systems or subsystems

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM234006A Evaluate and select thermodynamic systems or subsystems.

Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- interpreting features of plant and equipment and parameters of specifications
- advising client based on discipline knowledge and work health and safety (WHS) and regulatory standards
- researching sustainability implications and current thermodynamic system design techniques
- determining WHS, regulatory and risk management requirements
- modelling and calculating using appropriate software and validation techniques
- generating and evaluating solutions for feasibility against selection requirements on at least two occasions
- evaluating and selecting the most appropriate thermodynamic solution on at least two occasions
- communicating, negotiating and reviewing with stakeholders and client throughout the process to obtain agreement on proposal and sign-off on selection
- documenting evaluation and selection with drawings, specifications and instructions.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- typical documentation, drawings, specifications and instructions required in thermodynamic system selection processes
- WHS and regulatory requirements, codes of practice, standards, risk minimisation and registration requirements
- current options and trends in design, performance analysis, and modelling and simulation software relevant to thermodynamic systems, including underpinning program techniques and software validation techniques
- concepts of thermodynamics, properties of substances, conservation of mass and energy principles

- sustainability considerations
- law of entropy and the second law of thermodynamics
- second law analysis of thermodynamic systems
- actual and ideal gas cycles and vapour cycles
- impulse and reaction stages of turbines
- theory of heat transfer including conduction, convection, and radiation through different materials and geometric shapes
- heat flow solutions achieved by analytical, electrical analogy, graphical, numerical, failure effects analysis (FEA) and graphical software solution techniques.
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Assessment Conditions

- Assessors must:
 - have vocational competency in designing hydrodynamic pumping systems at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015 or its replacement* and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Links

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