Australian Government

Assessment Requirements for MEM234005 Design hydrodynamic pumping systems

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM234005A Design hydrodynamic pumping systems.

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 the brief or contract
- advising the client based on discipline knowledge and work health and safety (WHS) and regulatory standards
- researching sustainability implications and current industrial 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 design criteria
- designing hydrodynamic pumping 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 design
- documenting design 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:

- research and investigation methods
- design brief parameters
- techniques for:
  - continuous improvement
  - problem-solving and decision-making
  - root cause analysis (RCA) or failure mode and effects analysis (FMEA) or design review based on failure mode (DRBFM), and Pareto analysis
- contemporary engineering design methods
- relevant engineering design software
- design, research, modelling and computational methodologies applied to hydrodynamic pumping systems

- documentation, drawings, specifications and instructions
- WHS and regulatory requirements, codes of practice, standards, risk minimisation and registration requirements
- fundamentals of hydrodynamics including properties of substances and conservation of energy principles
- types of pumps including centrifugal, rotary and reciprocating
- pumping systems specifications including head equations, performance curves, valves, flow rates and efficiency
- pump placements
- cavitations
- rotodynamic pump performance parameters and specifications
- series and parallel pumps
- practical pump installations and operation problems
- pumping special fluids including viscous fluids, slurries, Newtonian and non-Newtonian fluids.
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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.
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Links

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