



Australian Government

Assessment Requirements for MEM234004 Design for engineering-related noise and vibration mitigation

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM234004A Design for engineering-related noise and vibration mitigation.

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 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
- designing noise and vibration mitigation solutions
- selecting appropriate noise measurement and testing equipment and techniques on at least two occasions
- selecting appropriate vibration measurement and testing techniques on at least two occasions
- modelling and calculating using appropriate software and validation techniques
- generating and evaluating solutions for feasibility against design criteria 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.

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:

- design brief parameter requirements
- common sources of noise and vibration in plant and equipment
- features of plant or equipment in relation to noise and vibration mitigation
- feasibility and evaluation methods and design criteria
- WHS and regulatory requirements, codes of practice, standards, risk minimisation and registration requirements
- techniques and equipment used to measure noise and vibration in plant and equipment

- noise and vibration modelling and calculation techniques
- current options and trends in performance analysis, modelling and simulation software and underpinning program techniques incorporating software validation
- physiological effects of noise and vibration
- risk factors for vibration and the human body
- industrial health and safety including audiometric testing
- noise and vibration concepts including vibration, noise, transmission of noise and vibration, and harmonic excitation
- sources of noise generation in plant and equipment
- noise mitigation control measures
- sources of vibrations in plant and equipment
- vibration mitigation and shock control measures
- options for noise reduction in machine design (rotor bearing positioning)
- statistical energy analysis (SEA)
- 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.
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Assessment Conditions

- Assessors must:
 - have vocational competency in designing for engineering related noise and vibration mitigation 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>