

Title	Establish vibration data from machinery using vibration measuring equipment		
Level	5	Credits	13

Purpose	People credited with this unit standard are able to: prepare for the collection of vibration data from machinery; collect vibration data and update the database; and evaluate data.
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Classification	Mechanical Engineering > Maintenance and Diagnostics in Mechanical Engineering
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Available grade	Achieved
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Entry information	
Recommended skills and knowledge	Unit 21911, <i>Demonstrate knowledge of safety on engineering worksites.</i>

Explanatory notes

- 1 References
 Health and Safety in Employment Act 1992.
 Accident Compensation Corporation and Department of Labour. *Metal Industry Guidelines for Safe Work*. Wellington: ACC, 2007. Available from <http://www.acc.co.nz>.

- 2 Definitions
Abnormal measurement – a departure in the frequency and/or amplitude characteristics from the normal fault characteristic.
Database – manuscript or electronic data collection systems where records may contain fields including date, machine identification, machine location, measurement, measurement points and values, process parameters, warning and alarm levels.
Machinery – includes processing and manufacturing plant, propulsion systems, power generating machines that contain rotating elements, - (motors, pumps, and fans) - and incorporating coupled, gearbox, and belt driven transmission types.
Operational limitations – machinery operating conditions for plant requirements which may in some instances supersede manufacturer's specifications and/or worksite procedures.
Safety guidelines – guidelines for the safe operation of machinery and tools, such as those listed in the references, as well as guidelines for specific machines in workshops.
Vibration measuring equipment – a range of instruments that measure, display, and analyse acceleration and vibration. Technologies include accelerometers and displacement sensors.

Worksite documents – manufacturer's documentation, drawings, maintenance management documentation, and other technical information.

Worksite procedures – operational procedures put in place by the candidate's employer. These include site safety procedures, equipment operating procedures, job procedures, quality assurance processes and procedures, and other procedures for the handling and disposal of materials and waste.

- 3 The following apply to this unit standard:
- All activities must demonstrate safe working practices.
 - All activities must be completed independently and reported within agreed timeframes.
 - Vibration instruments may be used on a stand-alone basis, or in conjunction with a data acquisition system. Assessment across all outcomes requires the candidate to use measuring equipment defined above to capture and analyse vibration data.
- 4 Range
Evidence of establishing vibration data on at least ten different machines, with at least a hundred measurements taken, is required.

Outcomes and evidence requirements

Outcome 1

Prepare for the collection of vibration data from machinery.

Evidence requirements

- 1.1 Sources of vibration are identified, explained, and related to machinery with different rotating elements.
- Range includes but is not limited to – mechanical, electrical, fluids.
- 1.2 Machinery characteristics and operational limitations applying to the machine to be tested are identified in accordance with worksite documents.
- 1.3 Vibration techniques for machinery are explained in accordance with worksite procedures.
- 1.4 Measuring equipment is selected and operating procedure is explained in accordance with equipment operating instructions and worksite procedures.

Outcome 2

Collect vibration data and update the database.

Evidence requirements

- 2.1 Hazards are identified when using instrumentation on operating machinery, and safety requirements are complied with, in accordance with worksite procedures.
- 2.2 Vibration measurements are taken in accordance with database requirements and worksite procedures.

- 2.3 Database is updated with the recorded data in accordance with worksite procedures.

Outcome 3

Evaluate data.

Evidence requirements

- 3.1 Vibration trends are determined from current and historical data.
- 3.2 The sequence of observations is graphically depicted.
- Range time series – continuous or discrete values.
- 3.3 Any data irregularities are identified and explained, and action is taken, as appropriate, in accordance with worksite procedures.
- 3.4 Advice is given, as appropriate, on the requirement for predictive maintenance programs.

Planned review date	31 December 2016
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 September 1997	31 December 2011
Revision	2	18 September 2001	31 December 2011
Review	3	28 April 2003	31 December 2011
Rollover	4	20 June 2008	31 December 2014
Review	5	17 November 2011	N/A

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Please note

Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact Competenz on qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.