

Title	Describe and use non destructive testing (NDT) technology		
Level	4	Credits	8

Purpose	People credited with this unit standard are able to: describe the use of NDT technology in mechanical engineering operations; carry out surface checking of parts using hand spray dye penetrant method; and carry out defect testing of parts using magnetic particle method.
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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	
Critical health and safety prerequisites	Unit 21912, <i>Apply safe working practices on an engineering worksite</i> , or demonstrate equivalent knowledge and skills.

Explanatory notes

- Candidates must comply with legislation applicable to this unit standard which includes Health and Safety Work Act 2015.
- Definitions
Worksite procedures refer to documents that include: worksite rules, codes, and practices; equipment operating instructions and maintenance schedules; documented quality management systems; and health and safety requirements.
Non-destructive testing (NDT) refers to the examination of materials and components in such a way that allows them to be examined without changing or destroying their usefulness.

Outcomes and evidence requirements

Outcome 1

Describe the use of NDT technology in mechanical engineering operations.

Evidence requirements

- 1.1 The description includes NDT methods available.
- Range may include but is not limited to – visual inspection, liquid penetration, acoustic emission, magnetic particle, eddy current, ultrasonic, radiography (x-ray).
- 1.2 The description includes capabilities and limitations of NDT.
- Range may include but is not limited to – material types suitable for testing, specialist knowledge requirements, value of data.
- 1.3 The description includes benefits of NDT in preventive maintenance programmes.
- Range may include but is not limited to – cost savings, accident prevention, improved product reliability.
- 1.4 The description includes examples of typical NDT applications.
- Range may include but is not limited to – flaws in components, variations in structural properties, hardness measurement.

Outcome 2

Carry out surface checking of parts using hand spray dye penetrant method.

Evidence requirements

- 2.1 The level and extent of surface checking is determined prior to commencing work.
- Range may include but is not limited to – job card, schedule, inspection criteria.
- 2.2 Parts are cleaned and tested in accordance with worksite procedures.
- 2.3 Test results are interpreted and checked for conformance against manufacturer's and client specifications.
- 2.4 Non-conforming parts are identified for repair or replacement in accordance with worksite procedures.
- 2.5 Test results are recorded in accordance with worksite procedures.

Outcome 3

Carry out defect testing of parts using magnetic particle method.

Evidence requirements

- 3.1 The level and extent of defect testing is determined prior to commencing work.
- Range may include but is not limited to – job card, schedule, inspection criteria.
- 3.2 Parts are cleaned and tested in accordance with worksite procedures.
- 3.3 Test results are interpreted and checked for conformance against manufacturer’s and client specifications.
- 3.4 Non-conforming parts are identified for repair or replacement in accordance with worksite procedures.
- 3.5 Test results are recorded in accordance with worksite procedures.

Replacement information	This unit standard has been replaced by unit standard 27205 and unit standard 27206.
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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 October 1994	31 December 2016
Revision	2	14 April 1997	31 December 2016
Revision	3	5 January 1999	31 December 2016
Revision	4	18 September 2001	31 December 2016
Review	5	28 April 2003	31 December 2016
Revision	6	25 July 2006	31 December 2016
Rollover	7	20 June 2008	31 December 2016
Review	8	15 April 2011	31 December 2016
Rollover	9	17 November 2016	31 December 2021

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 (CMRs). 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.

This unit standard is expiring