

Title	Demonstrate knowledge of level measurement systems used in industry		
Level	3	Credits	3

Purpose	<p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of pressure measurement devices used for level measurement; – calibrate level measurement devices; and – demonstrate knowledge of calibration methods for a level measurement system.
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Classification	Industrial Measurement and Control > Industrial Measurement and Control - Theory
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Available grade	Achieved
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Guidance Information

- 1 Reference
ANSI/ISA-51.1-1979 (R1993) *Process Instrumentation Terminology*; and all subsequent amendments and replacements.
- 2 Definition
Industry requirements – includes all asset owner requirements; manufacturers’ specifications; enterprise requirements which cover the documented workplace policies, procedures, specifications, and business requirements; and quality management requirements relevant to the assessment being carried out.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of pressure measurement devices used for level measurement.

Performance criteria

- 1.1 Describe differential pressure transmitters and their installation, as used for tank liquid level measurement systems.

Range	open tank, closed tank (wet leg, dry leg), diaphragm seals, bubble tube.
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- 1.2 Describe measurement methods for liquid levels.
- Range float, sight glass, displacer, ultrasonic, radar, nuclear radiation, capacitive, resistive, conductive.
- 1.3 Describe level measurement methods for solids and powder.
- Range ultrasonic, radar, nuclear radiation, capacitive.
- 1.4 Outline alternative applications of level measurement devices.
- Range differential pressure transmitters used for density measurement.
- 1.5 Explain non-linear tank level measurement applications.

Outcome 2

Calibrate level measurement devices.

Range pressure transmitters.

Performance criteria

- 2.1 Explain and follow safe work procedures.
- Range isolation, filled systems, chemical (oxygen or oil), pressure, mercury.
- 2.2 Select test equipment according to the accuracy and range of the device.
- Range deadweight tester, manometer, comparator.
- 2.3 Identify types and cause of typical measurement errors.
- Range temperature, vibration, wear, selection of device.
- 2.4 Calibrate devices by making appropriate adjustments.
- Range zero, span, linearity, head correction.
- 2.5 Record test results in accordance with industry requirements.

Outcome 3

Demonstrate knowledge of calibration methods for a level measurement system.

Range level measurement systems may include – displacer, ultrasonic, radar, nuclear radiation, capacitive, resistive, conductive; evidence of one level measurement system is required.

Performance criteria

- 3.1 Explain and follow safe work procedures.
- Range pressure, radiation, tank products.
- 3.2 Describe calibration procedures with reference to calibration principles and manufacturer's instructions.

Planned review date	31 December 2021
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	31 October 1995	31 December 2013
Revision	2	30 October 1997	31 December 2013
Revision	3	3 April 2001	31 December 2013
Review	4	22 June 2001	31 December 2013
Review	5	19 May 2008	31 December 2019
Review	6	28 November 2013	N/A
Rollover	7	28 June 2018	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.