

Title	Demonstrate knowledge of magnetism and AC generation		
Level	3	Credits	6

Purpose	People credited with this unit standard are able to demonstrate knowledge of: <ul style="list-style-type: none"> – magnetism; and – AC generation.
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Classification	Electrical Engineering > Core Electrical
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Available grade	Achieved
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Guidance Information

- 1 Definitions
AC – alternating current.
AC terms may include but are not limited to – sine wave, period, frequency, peak, peak-to-peak value, root mean square (RMS), instantaneous value, average value.
DC – direct current.
Magnetic terms may include but are not limited to – magnetic field strength, lines of force, magnetic poles and polarity, magnetic flux, flux density, permanent magnet, temporary magnet.
- 2 Where needed, sketches and drawings may be used to aid explanations.
- 3 This unit standard can be used together with other relevant unit standards, additional learning and workplace training to meet the requirements of the Electrical Workers Registration Board (EWRB) core competencies, available at <https://www.ewrb.govt.nz>.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of magnetism.

Performance criteria

- 1.1 Describe magnets, magnetic fields and three magnetic terms.
- 1.2 Describe the construction and operating principles of common electromagnets used in the electrical industry.

Range includes but is not limited to — one control, one protection device.

- 1.3 Briefly outline how magnetism is used in generators, electric motors, and transformers.

Outcome 2

Demonstrate knowledge of AC generation.

Performance criteria

- 2.1 Describe the essential differences between AC and DC.
- 2.2 Define common AC terms.
Range three AC terms.
- 2.3 Describe the operation and output waveforms of a simple single-loop, two-pole alternator with sliprings and brushes.
- 2.4 Perform simple AC calculations with reference to impedance.
Range $I = V \div Z$.

Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 March 2022	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 Waihangā Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@waihanga.nz if you wish to suggest changes to the content of this unit standard.