Title	**Operate and monitor an electricity generator and associated systems**		
Level	**4**	**Credits**	**10**

Purpose	This unit standard is for people working in a hydro or thermal electricity generation plant. People credited with this standard are able to: demonstrate knowledge of electricity generator design and operation; and operate and monitor the electricity generator and associated systems.

Classification	Electricity Supply > Electricity Supply - Core Skills

Available grade	Achieved

Guidance Information

1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable legislative and industry requirements.

2 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to:
- Health and Safety at Work Act 2015;
- Electricity Act 1992;
- Electricity (Safety) Regulations 2010;
- Electricity supply industry codes of practice and documented enterprise procedures, including *Safety Manual – Electricity Industry* (SM-EI) and relevant EEA guides available from www.eea.co.nz;
  and any subsequent amendments and replacements.

3 Definitions
Asset owner refers to a participant who owns or operates assets used for generating or conveying electricity
Associated systems include generator cooling systems, seal oil systems.
Generator refers to main system generators.
Industry requirements include all asset owner requirements and standards; manufacturers' specifications; and enterprise requirements which cover the documented workplace policies, procedures, specifications, business, and quality management requirements relevant to the workplace in which assessment is carried out.
Operate means manual operation and testing of electricity generation plant including plant adjustments, isolations, and restorations.

4 Range
This unit standard excludes standby and emergency generators.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of electricity generator design and operation.

Performance criteria

1.1 Generator design is described.

Range includes but is not limited to – construction, stator, rotor, number of poles, cooling.

1.2 Generator operation is described.

Range principles of operation, generator capabilities, volts, amps, var loadings.

1.3 Generator excitation is explained.

1.4 Generator synchronisation principles are explained.

Range phase, frequency, voltage.

1.5 Generator cooling and associated systems are described.

Range may include but is not limited to – stator cooling, seal oil, hydrogen, cooling air, control and indication, temperature control.

Outcome 2

Operate and monitor the electricity generator and associated systems.

Performance criteria

2.1 Operations are carried out.

Range includes but is not limited to – isolation, restoration, earthing, routine testing.

2.2 Operating and monitoring actions are logged.

2.3 Factors impacting operating decisions are identified.

Range includes but is not limited to – plant availability and service condition, resource consent and loading limits, impact on operations, market conditions.

2.4 Generator and associated systems are monitored.

2.5 Deviations from normal operating conditions are identified, logged, and acted upon.

Range may include but is not limited to – lube oil leak to stator, cooling water leak to stator, excessive temperature, loss of cooling or lubricating fluid, H_2S (hydrogen sulphide) ingression.

Replacement information	This unit standard replaced unit standard 17413.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 March 2017	31 December 2023
Review	2	30 September 2021	N/A

Consent and Moderation Requirements (CMR) reference	0120

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Connexis - Infrastructure Industry Training Organisation qualifications@infrastructureito.org.nz if you wish to suggest changes to the content of this unit standard.