

Title	Describe wind turbines and their components		
Level	2	Credits	6

Purpose	People who achieve this unit standard will be able to: describe the components of a wind turbine; describe how wind turbines adjust to changes in wind speed, wind direction, and load; and describe how electricity is generated by a wind turbine and the effects of changes in wind speed and direction.
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Classification	Electricity Supply > Electricity Supply - Power System Maintenance
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Available grade	Achieved
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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 the current version of the Health and Safety at Work Act 2015; Electricity Act 1992; Electricity (Safety) Regulations 2010; and any subsequent amendments and replacements; Electricity supply industry codes of practice and documented enterprise procedures, including *Safety Manual – Electricity Industry* (2015) available from www.eea.co.nz.
- 3 Definitions
Asset owner refers to a participant who owns or operates assets used for generating or conveying electricity.
Industry requirements include all asset owner requirements; 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.

Outcomes and performance criteria

Outcome 1

Describe the components of a wind turbine.

Performance criteria

- 1.1 The blades of a wind turbine are described in terms of their materials, design, and function.
- Range fiberglass, lightning protection, vortex generators.
- 1.2 The hub of a wind turbine is described in terms of its function and systems housed within it.
- Range pitch system, blade bearings, sensors, control system.
- 1.3 The nacelle of a wind turbine is described in terms of its function and systems housed within it.
- Range shaft, main bearing, generator, control system, yaw system, rotating union, slip ring.
- 1.4 The tower of a wind turbine is described in terms of its materials and function.
- Range coatings, platforms, cables, damper tanks.
- 1.5 The foundation of a wind turbine is described in terms of its material, size relative to the turbine, and function.
- 1.6 Instruments in or on top of the nacelle are described in terms of their function.
- Range anemometer, wind vane, condition monitoring, aviation light.
- 1.7 Physical structures associated with wind turbines are identified.
- Range ladders, hatches, beams, platforms, hoists, cranes, lifts.

Outcome 2

Describe how wind turbines adjust to changes in wind speed, wind direction, and load.

Performance criteria

- 2.1 Movement of the nacelle in response to changes in wind direction is described.
- 2.2 Movement of the blades in response to changes in wind speed is described.
- 2.3 Shutdown protection in response to conditions of the grid, weather, or internal faults is described.

Outcome 3

Describe how electricity is generated by a wind turbine and the effects of changes in wind speed and direction.

Performance criteria

- 3.1 Electricity generation by a wind turbine is described in terms of the components of a turbine and conversion of energy.
- 3.2 Changes in electricity generation in response to changes in wind speed and direction are described.

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	29 April 2021	N/A

Consent and Moderation Requirements (CMR) reference	0120
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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 Connexis - Infrastructure Industry Training Organisation at qualifications@connexis.org.nz if you wish to suggest changes to the content of this unit standard.