Title	**Demonstrate knowledge of mechanical systems in a wind turbine**		
Level	**3**	**Credits**	**5**

Purpose	People who achieve this unit standard will be able to demonstrate knowledge of mechanical systems in a wind turbine.

Classification	Electricity Supply > Electricity Supply - Power System Maintenance

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 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

Demonstrate knowledge of mechanical systems in a wind turbine.

Performance criteria

1.1 The principles of bolted and welded connections are explained.

1.2 Types of gearboxes and related issues are explained.

Range includes – helical gears, planetary gears, misalignment, lubrication, vibration.

1.3 The types and function of bearings are explained.

Range includes – blade bearings, main bearing, thrust bearings, yaw bearing, lubrication of bearings.

1.4 The types and function of brake systems are explained.

Range includes – active and passive brake systems, brake disc, brake pads, aerodynamic brake.

1.5 The types and function of yaw systems are explained.

Range includes – active and passive yaw systems, planetary gearbox, yaw controllers.

1.6 The types and function of cooling systems are explained.

Range includes – cooling of gear oil, hydraulic oil, generator, electrical systems, tower damper tanks.

1.7 The types of lubrication systems and related issues are explained.

Range includes – bearing lubrication, types of oil and grease, contamination of lubricant, seals.

1.8 The operation of a wind turbine is explained in terms of its mechanical systems.

1.9 Inspection and service methods are described.

Range includes – visual inspection for cracks, leaks, deformation, corrosion, wear, or discolouration, bolt tensioning, oil sampling, functional tests.

1.10 Tools for tensioning are identified, circumstances for their use, and means to use them safely are described.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	29 April 2021	31 December 2023
Rollover and Revision	2	26 May 2022	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 Waihanga Ara Rau Construction and Infrastructure Workforce Development Council qualifications@waihanga.nz if you wish to suggest changes to the content of this unit standard.