Title	**Maintain mechanical and hydraulic systems in a wind turbine**		
Level	**3**	**Credits**	**20**

Purpose	People credited with this unit standard are able to: remove a wind turbine from service; perform maintenance on mechanical and hydraulic systems; and return wind turbine to service.

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.
Job instructions are instructions given to the operator prior to undertaking a job. They may include site safety instructions, contract drawings, and written memos.

Outcomes and performance criteria

Outcome 1

Remove a wind turbine from service.

Performance criteria

1.1 Personal protective equipment and tools specific to the systems are selected.

1.2 Job instructions are confirmed against operating conditions.

1.3 Wind turbine is removed from service in a safe and controlled manner.

1.4 Mechanical and hydraulic systems are isolated following safe work procedures.

Outcome 2

Perform maintenance on mechanical systems.

Performance criteria

2.1 Mechanical systems in wind turbines are inspected for damage and wear and confirmed as operational.

Range systems include – brakes, yaw, cooling, lubrication, bolted and welded connections;
evidence is required for two systems.

2.2 Mechanical bolting systems are tightened, measured and tensioned using manual and hydraulic tools.

Range evidence is required for two different systems.

Outcome 3

Perform maintenance on hydraulic systems.

Performance criteria

3.1 Hydraulic systems in wind turbines are inspected for damage and wear.

Range systems include – pumps, actuators, valves, accumulators, sensors;
evidence is required for one system.

3.2 Hydraulic pressure is measured and confirmed as within specified range.

Range operational pressure, zero pressure for safe maintenance.

3.3 Accumulators are charged with nitrogen to the specified pre-charge level.

3.4 Leak testing and functional testing is carried out after restoring to operational state.

Range evidence of one test for leaks and one functional test is required.

Outcome 4

Return wind turbine to service.

Performance criteria

4.1 Isolations are removed in a safe manner and the mechanical and hydraulics systems are restored.

Range personal safety, safety of others, safety of equipment.

4.2 The wind turbine is returned to service.

4.3 Maintenance procedures are documented.

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	29 April 2021	N/A

Consent and Moderation Requirements (CMR) reference	0101

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@connexis.org.nz if you wish to suggest changes to the content of this unit standard.