

<b>Title</b>	<b>Demonstrate knowledge of hydraulic systems in a wind turbine</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>5</b>

<b>Purpose</b>	People who achieve this unit standard will be able to demonstrate knowledge of hydraulic systems in a wind turbine.
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<b>Classification</b>	Electricity Supply > Electricity Supply - Power System Maintenance
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<b>Available grade</b>	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](http://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.

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### Outcomes and performance criteria

#### Outcome 1

Demonstrate knowledge of hydraulic systems in a wind turbine.

#### Performance criteria

- 1.1 The principles of hydraulics are explained in terms of pressure, forces, and stored energy.

- 1.2 Pumps used in a wind turbine are described in terms of their function and characteristics.
- Range includes – operating pressures, pump efficiency, motor power, flow rates.
- 1.3 Actuators used in a wind turbine are described in terms of their type and function.
- Range includes – positive and negative piston movement, regenerative operation, seals, modes of failure.
- 1.4 Valves used in a wind turbine are described in terms of their type and function.
- Range includes – needle valves, seated valves, check valves, ball valves, directional valves, proportional valves, pilot operation, pressure relief valves, pressure reducing valves, test points, restrictors.
- 1.5 Accumulators used in a wind turbine are described in terms of their type and function.
- Range includes – diaphragm accumulators, bladder accumulators, piston accumulators, pre-charge pressure, operational pressure, stored energy.
- 1.6 Sensors used in a wind turbine are described in terms of their type and function.
- Range includes – pressure transducers, temperature transducers, level sensors.
- 1.7 The components that transfer oil are identified, and safe handling procedures are described.
- Range components include – hoses, seals, fittings, tank, filters; safe handling procedures include – the importance of oil cleanliness, oil sampling.
- 1.8 Components are identified on a hydraulic diagram for a wind turbine.
- 1.9 The hazards of hydraulic systems are explained.
- Range includes – crush injury, hydraulic injection injury, fire, toxic substances.
- 1.10 The method and instruments to measure pressure are described.
- Range includes – pressure transducers, manometers, test points.

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<b>Planned review date</b>	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

<b>Consent and Moderation Requirements (CMR) reference</b>	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](mailto:qualifications@connexis.org.nz) if you wish to suggest changes to the content of this unit standard.