

Title	Demonstrate knowledge of turbine governors used in electricity power plant		
Level	4	Credits	10

Purpose	People credited with this unit standard are able to demonstrate knowledge of: the purpose; components; operation; and a pressure oil supply system, of a turbine governor in an electricity generating power plant.
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Classification	Electricity Supply > Electricity Supply - Power System Management
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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:
 - Electricity Act 1992
 - Health and Safety at Work Act 2015
 - 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.
 - *Electricity Industry Participation Code 2010*, available from <https://www.ea.govt.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.
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.
- 4 Assessment against this unit standard includes the whole turbine governor system, from the speed sensing device out to, and including the main servo motors.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the purpose of a turbine governor in an electricity generating power plant.

Range output power, permanent speed droop, stability, frequency, load change.

Performance criteria

1.1 The purpose of a turbine governor is described with reference to automatic control systems.

Range start up, synchronising, power regulation, shut down, supplying isolated network.

1.2 Reference is made to accuracy and reliability of electricity supply.

Range Electricity Industry Participation Code: part 8 – Common quality.

1.3 The relationship between turbine and load characteristics is described.

Outcome 2

Demonstrate knowledge of the components of turbine governors in an electricity generating power plant.

Range may include – mechanical, electronic, analogue or digital governors, electro-hydraulic;
evidence of two different types of turbine governors is required.

Performance criteria

2.1 Turbine governor components are described.

2.2 Block diagrams are produced with all components labelled.

Outcome 3

Demonstrate knowledge of the operation of a turbine governor in an electricity generating power plant.

Performance criteria

3.1 The function of turbine governor components is described.

Range may include but is not limited to –
 hydro – pilot valve, main distributing valve, dither, speed sensing, servomotors, return motion/feedback, gate limiter, protection shut down device, pressure rise limiting devices, control power amplification;
 thermal – emergency stop valves, governor/intercept valves, gas valves, inlet guide vanes, combustor bypass valves, variable bleed valves, variable stator valves.

3.2 Governor operation in response to changes in load and required power output is explained with the aid of diagrams.

Range speed droop and protection shutdown.

Outcome 4

Demonstrate knowledge of a pressure oil supply system of a turbine governor in an electricity generating power plant.

Range accumulator tank and oil and air level regulation, pressure relief valve, sump tank, oil pump/s, unloader valve/s, non-return valve/s, oil level indication, oil pressure indication, oil filtration, oil coolers.

Performance criteria

4.1 Components of a pressure oil supply system are identified and described by means of diagrams.

4.2 The function of a pressure oil supply system is described by means of diagrams.

Planned review date	31 December 2027
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 March 2017	31 December 2021
Rollover and Revision	2	29 November 2018	31 December 2024
Review	3	2 March 2023	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 Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@WaihangaAraRau.nz if you wish to suggest changes to the content of this unit standard.