

Title	Describe, operate, and monitor pumps, fans, and compressors used in an energy and chemical plant		
Level	3	Credits	10

Purpose	<p>This unit standard is intended for people working as boiler operators and energy and chemical process operators in an energy and chemical plant.</p> <p>People credited with this unit standard are able to: describe pumps, fans and compressors used in the energy and chemical industry; and operate and monitor pumps, fans, and compressors in an energy and chemical plant.</p>
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Classification	Energy and Chemical Plant > Operation of Energy and Chemical Plant
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Available grade	Achieved
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Guidance Information

- 1 Legislation and regulations relevant to this unit standard include but are not limited to:
 - Health and Safety at Work Act 2015;
 - Health and Safety at Work (Hazardous Substances) regulations 2017 (HSWA);
 - Resource Management Act 1991; and any subsequent amendments.

- 2 Definitions

Energy and chemical plant may be in – petrochemical, agri-nutrient, power generation, dairy processing, meat processing, and wood fibre manufacturing, or other plants that operate with a combination of high temperatures, pressures, steam and/or chemicals in gas, liquid or solid form.

Organisational requirements – documented policies and procedures. These may include: equipment manufacturers' procedures; plant procedures; suppliers' instructions; site signage; codes of practice; company health and safety plans; on site briefings; and supervisor's instructions. This includes all regulatory and legislative obligations that apply to the plant.

Plant – the operational unit, equipment and/or workplace at which the person is working.

- 3 For the purposes of assessment:
 - evidence for the practical components of this unit standard must be supplied from the workplace.

Outcomes and performance criteria

Outcome 1

Describe pumps, fans, and compressors used in the energy and chemical industry.

Performance criteria

1.1 Describe types of pumps in terms of operating principles, components and purpose.

Range pumps may include but are not limited to – single stage centrifugal, multi-stage centrifugal, axial flow, reciprocating, positive displacement; evidence of two different types is required.

1.2 Describe poor pump performance in terms of the signs and causes.

Range signs include but are not limited to – vibration, cavitation, vapour lock, leaks.

1.3 Describe types of compressors in terms of operating principles, components and purpose.

Range compressors include but are not limited to – centrifugal, reciprocating, screw.

1.4 Describe poor compressor performance in terms of the signs and causes.

Range signs include but are not limited to – vibration, stall, overload, low discharge pressure, surge, recycle.

1.5 Describe types of fans in terms of operating principles, components and purpose.

Range fans include but are not limited to – axial flow, centrifugal.

1.6 Describe poor fan performance in terms of the signs and causes.

Range signs include but are not limited to – vibration, overload, low discharge pressure, flow obstruction.

Outcome 2

Operate and monitor pumps, fans and compressors in an energy and chemical plant.

Performance criteria

2.1 Identify the location of pumps, fans and compressors in accordance with the site-specific identification coding system and organisational requirements.

- 2.2 Operate pumps, fans and compressors using safe work practices in accordance with organisational requirements.
- 2.3 Start pumps, fans and compressors up in accordance with organisational requirements.
- 2.4 Monitor and record operating and status data in accordance with organisational requirements.

Planned review date	31 December 2024
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	8 November 1995	31 December 2014
Revision	2	15 December 1998	31 December 2014
Review	3	29 May 2000	31 December 2014
Revision	4	24 July 2002	31 December 2014
Review	5	28 February 2006	31 December 2014
Review	6	22 May 2009	31 December 2016
Review	7	24 October 2014	31 December 2022
Review	8	27 February 2020	N/A

Consent and Moderation Requirements (CMR) reference	0079
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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 the Primary Industry Training Organisation standards@primaryito.ac.nz if you wish to suggest changes to the content of this unit standard.