

## 40387 Operate and monitor pumps, fans, and compressors used in an energy and chemical plant

<b>Kaupae   Level</b>	3
<b>Whiwhinga   Credit</b>	10
<b>Whāinga   Purpose</b>	<p>This skill 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 skill 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> <p>This skill standard can be used in the New Zealand Energy and Chemical qualifications at Level 3 and above.</p>

### Hua o te ako me Paearu aromatawai | Learning outcomes and assessment criteria

<b>Hua o te ako   Learning outcomes</b>	<b>Paearu aromatawai   Assessment criteria</b>
1. Describe pumps, fans, and compressors used in the energy and chemical industry.	a. Describe types of pumps in terms of operating principles, components and purpose.
	b. Describe poor pump performance in terms of the signs and causes.
	c. Describe types of compressors in terms of operating principles, components and purpose.
	d. Describe poor compressor performance in terms of the signs and causes.
	e. Describe types of fans in terms of operating principles, components and purpose.
	f. Describe poor fan performance in terms of the signs and causes.
2. Operate and monitor pumps, fans and compressors in an energy and chemical plant.	a. Locate pumps, fans and compressors in accordance with the site-specific identification coding system and organisational requirements.
	b. Operate pumps, fans and compressors using safe work practices in accordance with organisational requirements.
	c. Start pumps, fans and compressors up in accordance with organisational requirements.
	d. Monitor and record operation and status data of pumps, fans and compressors in accordance with organisational requirements.

**Pārongo aromatawai me te taumata paearu | Assessment information and grade criteria**

- evidence for the practical components of this skill standard must be supplied from the workplace.
- 1a: 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.
- 1b: signs include but are not limited to – vibration, cavitation, vapour lock, leaks.
- 1c: compressors include but are not limited to – centrifugal, reciprocating, screw.
- 1d: signs include but are not limited to – vibration, stall, overload, low discharge pressure, surge, recycle.
- 1e: fans include but are not limited to – axial flow, centrifugal.
- 1f: signs include but are not limited to – vibration, overload, low discharge pressure, flow obstruction.

**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.

**Ngā momo whiwhinga | Grades available**

Achieved

**Ihirangi waitohu | Indicative content**

None

**Rauemi | Resources**

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.

**Pārongo Whakaū Kounga | Quality assurance information**

<b>Ngā rōpū whakatau-paerewa  </b> Standard Setting Body	Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council
<b>Whakaritenga Rārangi Paetae Aromatawai  </b> DASS classification	Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant
<b>Ko te tohutoro ki ngā Whakaritenga i te Whakamanatanga me te Whakaōritenga  </b> CMR	0079

<b>Hātepe</b>   Process	<b>Putanga</b>   Version	<b>Rā whakaputa</b>   Review Date	<b>Rā whakamutunga mō te aromatawai</b>   Last date for assessment
<b>Rēhītatanga</b>   Registration	1	27 March 2025	N/A
<b>Kōrero whakakapinga</b>   Replacement information	This skill standard replaced unit standard 4553.		
<b>Rā arotake</b>   Planned review date	31 December 2029		

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council at [qualifications@hangaarorau.nz](mailto:qualifications@hangaarorau.nz) to suggest changes to the content of this skill standard.