

40461 Control process start-up and shutdown in an energy and chemical plant

Kaupae Level	5
Whiwhinga Credit	20
Whāinga Purpose	This skill standard is intended for experienced people working as boiler operators, energy and chemical process operators, and senior managers in an energy and chemical plant. People credited with this skill standard are able to: describe systems for routine process start-up and routine process shutdown; and explain emergency or unplanned process shutdown, in an energy and chemical plant. They are also able to control a process start-up and shutdown in an energy and chemical plant. This skill standard can be used in the New Zealand Energy and Chemical qualifications at Level 5.

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

Hua o te ako Learning outcomes	Paearu aromatawai Assessment criteria
1. Describe systems for routine process start-up in an energy and chemical plant.	a. Outline the steps involved in routine start-up process.
	b. Identify indicators or authorities required to commence process start-up.
	c. Explain common deviations from expected operating parameter changes during process start-up in terms of their causes and corrective actions.
2. Describe systems for routine process shutdown in an energy and chemical plant.	a. Outline the steps involved in routine process shutdown.
	b. Identify indicators or authorities required to commence process shutdown.
	c. Explain expected parameter deviations during process shutdown in terms of their causes and corrective actions.
	d. Describe post-shutdown checks in terms of their purpose.
	e. Describe post-shutdown reporting and documentation.

Hua o te ako Learning outcomes	Paearu aromatawai Assessment criteria
3. Explain emergency and unplanned process shutdown in an energy and chemical plant.	a. Identify events that may cause an emergency and unplanned process shutdown for the process.
	b. Explain impacts of an emergency and unplanned process shutdown on upstream and downstream operations.
	c. Identify communication systems used in an emergency and unplanned process shutdown.
	d. Outline the steps involved in an emergency and unplanned process shutdown.
4. Control process start-up and shutdown in an energy and chemical plant.	a. Communicate responsibilities during start-up and shutdown to relevant personnel.
	b. Coordinate process steps for start-up and shutdown.
	c. Monitor plant parameters during the start-up and shutdown and undertake any corrective actions to maintain the plant within control parameters and operating consents.
	d. Check the plant end state condition to ensure operational requirements are met and report any variances.

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

Assessment specifications:

- evidence for the practical components of this skill standard must be supplied from the workplace.
- evidence for all outcomes must be presented in accordance with organisational requirements.
- 1c: evidence of two (2) deviations is required.
- 2c: evidence of two (2) deviations is required.
- 3b: evidence of two (2) impacts is required – one (1) emergency and one (1) unplanned.

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.

Process – a complex and integrated set of actions in an energy and chemical plant supplying product(s) to customers.

Ngā momo whiwhinga | Grades available

Achieved

Ihirangi waitohu | Indicative content

None

Rauemi | Resources

Legislation relevant to this skill standard includes but is not limited to:

- Health and Safety at Work Act 2015;
 - Hazardous Substances and New Organisms Act 1996;
 - Resource Management Act 1991;
- and any subsequent amendments.

Pārongo Whakaū Kounga | Quality assurance information

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

Hātepe Process	Putanga Version	Rā whakaputa Review Date	Rā whakamutunga mō te aromatawai Last date for assessment
Rēhitatanga Registration	1	24 April 2025	N/A
Kōrero whakakapinga Replacement information	This skill standard replaced unit standard 28162.		
Rā arotake Planned review date	31 December 2029		

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