

Field Manufacturing

Registration of skill standards and review of *Operation of Energy and Chemical Plant* unit standards (Levels 4 and 5)

Subfield	Domain	ID
Energy and Chemical Plant	Operation of Energy and Chemical Plant	17604, 17608, 17609, 17610, 17611, 18733, 21454, 21455, 21456, 21457, 21460, 21463, 21465, 21466, 28159, 28160, 28283, 3032, 3035, 3036, 3048, 3051, 3053, 32031, 32032, 32033, 32061, 9583, 9587, 28162, 28163, 28164, 28165, 28166, 28167, 3037, 9616

The Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council has completed the review of the standards listed above.

Date new versions published

April 2025

Planned review date

December 2029

Summary

Hanga-Aro-Rau Manufacturing, Engineering, and Logistics Workforce Development Council met with employers and Te Pūkenga subsidiaries between September 2023 and June 2024 to review the unit standards listed above.

These unit standards were originally developed to meet the graduate profile outcomes (GPOs) in the:

- New Zealand Certificate in Energy and Chemical Field Operations (Level 4) with strands in Advanced Steam Generation Plant Operation, Chemical Plant Operation, Geothermal Plant Operation, Petrochemical Plant Operation, and Petrochemical Transfer and Storage (with optional strands in Gas Turbine Operation, and Steam Turbine Operation) [Ref: 2307], and associated unit standards
- New Zealand Certificate in Energy and Chemical Process Operations (Level 5) [Ref: 2308], and associated unit standards.

As part of the rollout of skill standards, the review panel agreed to create a new suite of skill standards to support programmes leading towards the above qualifications. However, due to the highly regulated nature of the Energy and Chemical industry, and as the majority of unit standards were considered fit for purpose by industry stakeholders, most of the content of the unit standards was retained to enable programme continuity.

Main changes

- 33 unit standards were reviewed and were replaced with 33 skill standards to reflect current industry practice.
- 4 unit standards were expired without replacement.

Category C and D standards will expire at the end of December 2026

Impact on existing organisations with consent to assess

Current consent for			Consent extended to		
Nature of consent	Classification or ID	Level	Nature of consent	Classification or ID	Level
Standard	3035	4	Standard	40450	4
	3037	5		40467	5
	28164	5		40463	5
	28165	5		40464	5
	28166	5		40465	5
	28167	5		40466	5

Detailed list of standards – classification, title, level, and credits

All changes are in **bold**.

Key to review category	
A	Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
B	Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number
C	Major changes that necessitate the registration of a replacement standard with a new ID
D	Standard will expire and not be replaced

Manufacturing > Energy and Chemical Plant > Operation of Energy and Chemical Plant

ID	Title	Level	Credit	Review Category
3032	Describe and operate valves in an energy and chemical plant	4	7	C
40449	Operate valves in an energy and chemical plant	4	7	
3035	Demonstrate knowledge of and operate fired pressure equipment in an energy and chemical plant	4	10	C
40450	Operate fired pressure equipment in an energy and chemical plant	4	10	
3036	Demonstrate knowledge of and operate unfired pressure equipment in an energy and chemical plant	4	8	C
40451	Operate unfired pressure equipment in an energy and chemical plant	4	8	
3037	Demonstrate knowledge of, operate, and monitor an advanced steam generation process	5	20	C
40467	Operate and monitor an advanced steam generation process	5	20	
3048	Demonstrate knowledge of and operate product storage equipment in an energy and chemical plant	4	8	C
40452	Operate a product storage system in an energy and chemical plant	4	8	
3051	Demonstrate knowledge of heat transfer and exchange, and operate heat exchange equipment in an energy and chemical plant	4	7	C
40453	Operate heat exchange equipment in an energy and chemical plant	4	7	
3053	Demonstrate knowledge of and operate a gas turbine in an energy and chemical plant	4	20	C
40454	Operate a gas turbine in an energy and chemical plant	4	20	

ID	Title	Level	Credit	Review Category
9583	Demonstrate knowledge of and manage product storage and transfer facilities in an energy and chemical plant	4	6	C
40459	Manage product storage and transfer facilities in an energy and chemical plant	4	6	
9587	Demonstrate knowledge of and operate product separation equipment to separate product in an energy and chemical plant	4	10	C
40460	Operate product separation equipment in an energy and chemical plant	4	10	
9616	Demonstrate knowledge of and control emergency and unplanned shutdowns in an energy and chemical plant	5	12	C
40468	Control emergency and unplanned shutdowns in an energy and chemical plant	5	12	
17604	Demonstrate knowledge of and operate primary treatment systems for effluent water in an energy and chemical plant	4	8	D
17608	Demonstrate knowledge of and operate sludge treatment systems for effluent water in an energy and chemical plant	4	8	D
17609	Describe and operate geothermal binary plant in the energy and chemical industry	4	20	C
40436	Operate geothermal binary plant in the energy and chemical industry	4	20	
17610	Describe and operate pre-treatment systems for effluent water in an energy and chemical plant	4	8	D
17611	Demonstrate knowledge of and operate biological treatment systems for effluent water in an energy and chemical plant	4	8	D
18733	Operate equipment for distillation in an energy and chemical plant	4	8	C
40437	Operate distillation equipment in an energy and chemical plant	4	8	
21454	Demonstrate knowledge of and operate refrigeration equipment in an energy and chemical plant	4	10	C
40438	Operate refrigeration equipment in an energy and chemical plant	4	10	
21455	Describe purging, and purge systems in an energy and chemical plant	4	10	C
40439	Purge systems in an energy and chemical plant	4	10	
21456	Demonstrate knowledge of and operate systems for boiler feedwater treatment	4	15	C
40440	Operate systems for boiler feedwater treatment	4	15	
21457	Demonstrate knowledge of the principles of isolating and isolate and reinstate a section of an energy and chemical plant	4	10	C
40441	Isolate and reinstate a section of an energy and chemical plant	4	10	
21460	Meet requirements of person responsible for an unattended small steam or hot water boiler	4	10	C
40442	Manage the safe operation of an unattended steam or hot water boiler	4	10	

ID	Title	Level	Credit	Review Category
21463	Demonstrate knowledge of and perform boiler plant operations	4	15	C
40443	Perform boiler plant operations	4	15	
21465	Describe and operate pumps in an energy and chemical plant	4	8	C
40444	Operate pumps in an energy and chemical plant	4	8	
21466	Describe and operate compressors in an energy and chemical plant	4	8	C
40445	Operate compressors in an energy and chemical plant	4	8	
28159	Demonstrate knowledge of geothermal processes and equipment in an energy and chemical plant	4	10	C
40446	Recognise geothermal processes and equipment in an energy and chemical plant	4	10	
28160	Operate geothermal steam-field equipment and processes in an energy and chemical plant	4	20	C
40447	Operate geothermal steam-field processes and equipment in an energy and chemical plant	4	20	
28162	Describe and carry out process start-up and shutdown in an energy and chemical plant	5	20	C
40461	Control process start-up and shutdown in an energy and chemical plant	5	20	
28163	Describe and control normal and abnormal process conditions in an energy and chemical plant, and recommend improvements	5	30	C
40462	Control normal and abnormal process conditions in an energy and chemical plant	5	30	
28164	Describe and apply a safe work management system in an energy and chemical plant	5	20	C
40463	Control a safe work management system in an energy and chemical plant	5	20	
28165	Coordinate an outage in a complex energy and chemical plant	5	30	C
40464	Coordinate a planned operational outage in a complex energy and chemical plant	5	30	
28166	Analyse commercial operational compliance and risks and develop a risk action plan in an energy and chemical plant	5	10	C
40465	Analyse commercial operational compliance and risks, and create a risk action plan in an energy and chemical plant	5	10	
28167	Demonstrate knowledge of and review process safety incidents in an energy and chemical plant	5	10	C
40466	Review process safety incidents in an energy and chemical plant	5	10	
28283	Describe hazard management, and apply and monitor risk assessment procedures in an energy and chemical plant	4	5	C
40448	Apply and monitor risk assessment procedures in an energy and chemical plant	4	5	

ID	Title	Level	Credit	Review Category
32031	Describe the properties and use of engineering materials used in an energy and chemical plant primary process	4	3	C
40455	Recognise the properties, selection, and use of engineering materials in an energy and chemical plant	4	3	
32032	Describe, operate, and monitor a generator and associated systems in an energy and chemical plant	4	10	C
40456	Operate and monitor a generator and associated systems in an energy and chemical plant	4	10	
32033	Describe, carry out, and receive shift to shift handover of operational plant in the energy and chemical industry	4	4	C
40457	Carry out and receive shift-to-shift handover of operational plant in the energy and chemical industry	4	4	
32061	Demonstrate knowledge of and operate a steam turbine in an energy and chemical plant	4	20	C
40458	Operate a steam turbine in an energy and chemical plant	4	20	