

National Certificate in Energy and Chemical Plant (Process Operation) (Level 2) with optional strands in Petrochemical Industry; Kraft Pulp and Chemical Operations; and Kraft Liquor Evaporation

Level	2
Credits	55

Purpose

The National Certificate in Energy and Chemical Plant (Process Operation) (Level 2) with optional strands in Petrochemical Industry; Kraft Pulp and Chemical Operations; and Kraft Liquor Evaporation [Ref: 1343] recognises the competence, knowledge and skills of an entry level operator in the Energy and Chemical industry. The qualification has a compulsory core designed to develop a range of elementary operational skills and knowledge, required by all operators at this level in the Energy and Chemical industries. The core qualification can therefore be gained without the optional strands.

The compulsory section of this qualification shares common safety and environmental standards with the National Certificate in Energy and Chemical Plant (Boiler Operation) (Level 2) [Ref: 1342]. This will allow the transfer of these industry generic skills into the broader Energy and Chemical industry.

The Petrochemical Industry and Pulp and Paper Industry have added optional strands to this qualification that build on the core qualification and develop industry specific skills and knowledge required to work as an entry level operator in these industries.

People who have completed the National Certificate in Energy and Chemical Plant (Process Operation) (Level 2) with optional strands [Ref: 1343] can continue on a career pathway to the National Certificate in Energy and Chemical Plant (Process Operation) with optional strands in Steam Generation; Turbine Operations; Waste Treatment; Refrigeration; Chemical Continuous Process; Chemical Batch Process; Solid Handling; Petrochemical Field Operations; Petrochemical Control Room Operations; Petrochemical Production Storage; Kraft Cycle Operations; Kraft Bleach and Chemical Operations; and Kraft Pulping and Chemical Plant [Ref: 1344]. The National Certificate in Energy and Chemical Plant (Boiler Operation) (Level 2) [Ref: 1342] and the optional industry strands in this qualification form a foundation for the optional strands in the National Certificate in Energy and Chemical Plant (Process Operation) with optional strands [Ref: 1344].

Replacement Information

This qualification replaced the National Certificate in Energy and Chemical Plant (Process Operation) (Level 2) with optional strands in Steam Generation, Ancillary Operations, Geothermal, Waste Treatment, and Co-generation [Ref: 0140] and the National Certificate in Petrochemical Industry (Core) (Level 2) [Ref: 0977].

Special Notes

It is recommended that candidates possess knowledge in general educational areas of mathematics, chemistry, and physics. Evidence of that knowledge might be demonstrated by achievement in those subjects through credits at level 2 or above. This knowledge will allow the development of skills relating to the handling and preparation of chemicals, the relating of the knowledge to thermodynamics, and the chemistry of pollutants.

Credit Range

	Compulsory	Elective	Petrochemical Industry Optional Strand
Level 2 credits	19	0-3	15
Level 3 credits	25	0-5	7
Level 4 credits	8	-	-
Minimum totals	52	3	22
Qualification totals	55		77

	Kraft Pulp and Chemical Operations Optional Strand		Kraft Liquor Evaporation Optional Strand	Key: C = Compulsory E = Elective
	C	E		
Level 2 credits	16	0-11	21	
Level 3 credits	5	0-11	10	
Level 4 credits	-	0-11	15	
Minimum totals	21	11	46	
Qualification totals	87		101	

Requirements for Award of Qualification

- Compulsory standards
- Elective – A minimum of 1 standard as specified

The following strands are optional

- Petrochemical Industry Optional Strand
- Kraft Pulp and Chemical Operations Optional Strand
- Kraft Liquor Evaporation Optional Strand

Award of NQF Qualifications

Credit gained for a standard may be used only once to meet the requirements of this qualification.

Unit standards and achievement standards that are equivalent in outcome are mutually exclusive for the purpose of award. The table of mutually exclusive standards is provided in section 7 of the New Zealand Qualifications Authority (NZQA) *Rules and Procedures* publications available at <http://www.nzqa.govt.nz/ncea/acrp/index.html>.

Reviewed standards that continue to recognise the same overall outcome are registered as new versions and retain their identification number (ID). Any version of a standard with the same ID may be used to meet qualification requirements that list the ID and/or that specify the past or current classification of the standard.

Detailed Requirements

Compulsory

The following standards are required

Health > Occupational Health and Safety > Occupational Health and Safety Practice

Id	Title	Level	Credit
17602	Apply hazard identification and risk assessment procedures in the workplace	3	4

Manufacturing > Energy and Chemical Plant > Monitoring of Energy and Chemical Plant

Id	Title	Level	Credit
21452	Monitor energy and chemical plant and processes	3	5

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

Id	Title	Level	Credit
3032	Operate valves on energy and chemical plant	4	8
3047	Interpret, use, and sketch process drawings for energy and chemical plant	3	2
4553	Operate common pumps, compressors and fans in a chemical and energy environment	2	5
21459	Demonstrate knowledge of pipework and fittings in the energy and chemical industry	2	4
21464	Demonstrate knowledge of basic thermodynamics and measurement for energy and chemical plant	3	6

Manufacturing > Energy and Chemical Plant > Safety and Legislation for Energy and Chemical Plant

Id	Title	Level	Credit
21467	Store and handle chemicals for energy and chemical plant	3	8
21468	Demonstrate knowledge of energy and chemical plant pollutants and their control measures	2	5
21469	Operate energy and chemical plant personnel safety systems	2	5

Elective

A minimum of 1 standard

Manufacturing > Energy and Chemical Plant > Monitoring of Energy and Chemical Plant

Id	Title	Level	Credit
3054	Read and interpret instruments used on energy and chemical plant	3	5
3060	Take product samples for energy and chemical plant	2	3

Petrochemical Industry Optional Strand

The following standards are required

Community and Social Services > Community and Workplace Fire and Emergency Management > Workplace Fire and Emergency Response

Id	Title	Level	Credit
3271	Suppress fire with hand extinguishers and fixed hose reels	2	1
4647	Explain principles of fire science	2	1

Engineering and Technology > Petrochemical Industry > Petrochemical Operations Communication and Responses

Id	Title	Level	Credit
9618	Use and interpret petrochemical industry documentation	3	3
9621	Interpret symbols, signs, and terminology specific to a petrochemical environment	2	2

Engineering and Technology > Petrochemical Industry > Petrochemical Process and Product Management

Id	Title	Level	Credit
19417	Demonstrate knowledge of gas testing theory in a petrochemical environment	2	3
19418	Demonstrate knowledge of basic chemistry used in petrochemical environments	2	4

Health > Occupational Health and Safety > Occupational Health and Safety Practice

Id	Title	Level	Credit
17593	Apply safe work practices in the workplace	2	4
18426	Demonstrate knowledge of hazards associated with confined space	3	4

Kraft Pulp and Chemical Operations Optional Strand

Meet the requirements of all of the following sets

- Kraft Pulp and Chemical Operations Optional Strand Compulsory
- Kraft Pulp and Chemical Operations Optional Strand Elective

Kraft Pulp and Chemical Operations Optional Strand Compulsory

The following standards are required

Manufacturing > Wood Fibre Manufacturing > Pulp and Paper - Chemical Plants

Id	Title	Level	Credit
5680	Explain principles of the chemical recovery process in the production of kraft wood pulp	3	5

Manufacturing > Wood Manufacturing - Generic Skills > Wood Manufacturing Foundation Skills

Id	Title	Level	Credit
17860	Demonstrate knowledge of principles of matter, energy, and chemistry used in wood manufacturing industries	2	8
17861	Demonstrate knowledge of principles of heat, energy, and work as used in wood manufacturing	2	8

Kraft Pulp and Chemical Operations Optional Strand Elective

A minimum of 11 credits

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

Id	Title	Level	Credit
21456	Operate systems for boiler feedwater treatment	4	12

Manufacturing > Wood Fibre Manufacturing > Pulp and Paper - Chemical Plants

Id	Title	Level	Credit
3623	Process crude tall oil from tall oil soap as a by-product of wood pulp manufacturing	3	5
3624	Process crude sulphate turpentine and red oil as a by-product of wood pulp manufacturing	3	3
3637	Describe principles of causticising and lime kiln operation in wood pulp manufacturing	2	8
15821	Prepare primary brine for electrolysis in pulp and paper chemical plants	3	8
21496	Load pulp and paper chemical by- products into road or rail tankers	4	3

Manufacturing > Wood Fibre Manufacturing > Pulp and Paper Manufacturing Skills

Id	Title	Level	Credit
3510	Test in-process pulp and chemicals as a pulp and paper manufacturing plant operator	2	3

Service Sector > Driving > Driver Licence Endorsements

Id	Title	Level	Credit
16718	Demonstrate knowledge of law and practice for the transport of Dangerous Goods by road	3	5

Kraft Liquor Evaporation Optional Strand

The following standards are required

Manufacturing > Wood Fibre Manufacturing > Pulp and Paper - Chemical Plants

Id	Title	Level	Credit
3620	Condition liquor using black liquor evaporator for wood pulp manufacturing	4	15

Id	Title	Level	Credit
3622	Condition liquor using BLOX plant for wood pulp manufacturing	3	5
3638	Describe principles of black liquor combustion for wood pulp manufacturing	2	5
5680	Explain principles of the chemical recovery process in the production of kraft wood pulp	3	5

Manufacturing > Wood Manufacturing - Generic Skills > Wood Manufacturing Foundation Skills

Id	Title	Level	Credit
17860	Demonstrate knowledge of principles of matter, energy, and chemistry used in wood manufacturing industries	2	8
17861	Demonstrate knowledge of principles of heat, energy, and work as used in wood manufacturing	2	8

Transition Arrangements

This qualification replaced the National Certificate in Energy and Chemical Plant (Process Operation) (Level 2) with optional strands in Steam Generation, Ancillary Operations, Geothermal, Waste Treatment, and Co-generation [Ref: 0140] and the National Certificate in Petrochemical Industry (Core) (Level 2) [Ref: 0977].

There are differences between the new and replaced qualifications. Changes include:

- the compulsory and elective sections are common to all industries in the new qualification
- only the Petrochemical Industry and Pulp and Paper Industry have placed optional strands in the new qualification.

Petrochemical Industry Optional Strand

- replaces the National Certificate in Petrochemical Industry (Core) (Level 2) [Ref: 0977]
- standards 1277, 3503, 5868, 9588, 9625, 9631, 16800, 17588, and 19419 have been deleted
- standards 3271, 4647, and 18426 have been added to the strand
- standard 497 was replaced by standard 17593
- standards 4556, 4559, 3062, and 3065 were replaced by standards 21459, 3032, 21467, and 21469 respectively
- standards 17602, 3047, and 4553 were moved to the compulsory section
- standard 3060 was moved to the elective section.

For detailed information see [Review Summaries](#) on the NZQA website.

People currently working towards either of the replaced qualifications may complete the requirements for that qualification by 31 December 2010 or transfer their results to the new qualification. The last date for entry to training programmes or courses for the replaced qualifications is December 2008. Assessments for the new qualification can start immediately.

It is anticipated that no existing trainees will be disadvantaged by these transition arrangements. Any person who feels they have been disadvantaged by these transition arrangements should contact the New Zealand Extractive Industries Training Organisation at the address below. Appeals will be considered on a case by case basis.

This qualification contains standards that replace earlier standards. For the purposes of this qualification, people who have gained credit for the expiring standards are exempt from the requirement to gain credit for the replacement standards – see table below.

Credit for	Exempt from
3041	21456
3059	21452
3062, 3063	21467
3065	21468
3067	21469

NQF Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	December 2007	N/A

Standard Setting Body

NZ Extractive Industries Training Organisation
PO Box 2623
CHRISTCHURCH

Telephone 03 964 4710
Email info@exito.org.nz

Planned review

Any person or organisation may contribute to the review of this qualification by sending feedback to the standard setting body at the above address.

Next Review	2011
-------------	------

Other standard setting bodies whose standards are included in the qualification

Fire and Rescue Services Industry Training Organisation
Forest Industries Training and Education Council (FITEC)
New Zealand Industry Training Organisation
Tranzqual ITO

Certification

The certificate will display the logos of NZQA and the awarding ITO (Electricity Supply Industry Training Organisation, Forest Industries Training and Education Council, New Zealand Extractive Industries Training Organisation, or New Zealand Industry Training Organisation).

Classification

This qualification is classified according to the NQF classification system and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

NQF Classification		NZSCED	
Code	Description	Code	Description
282	Manufacturing > Energy and Chemical Plant	030301	Engineering and Related Technologies > Process and Resources Engineering > Chemical Engineering

Quality Management Systems

Providers and Industry Training Organisations must be accredited by a recognised Quality Assurance Body before they can register credits from assessment against standards. Accredited providers and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Accreditation requirements and the moderation system are outlined in the associated Accreditation and Moderation Action Plan (AMAP) for each standard.