

**Field      Engineering and Technology****Review of *Refrigeration and Air Conditioning* unit standards**

<b>Subfield</b>	<b>Domain</b>	<b>ID</b>
Mechanical Engineering	Refrigeration and Air Conditioning	3831, 3837, 3841, 3846, 3847, 3851, 3852, 19666, 22701, 22702, 22703, 22704, 22705, 22706, 22707, 22708, 23959.

Competenz has completed the review of the unit standards listed above as part of the Mandatory Review of Qualifications for the Refrigeration and Air Conditioning industry.

**Date new versions published**

**18 June 2015**

**Planned review date**

**31 December 2020**

**Summary**

The Mandatory Review of Qualifications for the industry sector completed in 2014 identified several issues relating to the structure of unit standards, clarity of content, and consistency of terms, to meet the requirements of the new qualification. Some gaps in the coverage of required skills and knowledge were also identified.

The consultation process included a series of face to face meetings and ongoing follow-up communications with stakeholders. The process identified a need for several new standards, standards that required changing or restructuring, and standards that were no longer required for the proposed qualification.

Subject matter experts from industry, training providers, and the Institute of Refrigeration Heating & Air Conditioning Engineers of New Zealand Inc (IHRACE) were consulted on the changes to existing standards and the development of the new standards.

Level 5 standards 3842, 22709, 26721 and 26722 were not part of this review and will be reviewed with the Level 5 Mechanical Engineering qualifications.

The review resulted in 21 new standards. Eight standards were designated as expiring, of which 6 were replaced by new standards.

**Main changes**

- Terms and language were changed to improve clarity and provide consistency across all standards.
- Ten new standards were developed.
- Explanatory notes were updated to reflect current legislation, regulations, industry codes of practice, and to standardise the reference text.
- Standards 22702-22705 were restructured and replaced by eight new standards to cover skills and underpinning knowledge separately.
- Standard 22706 was restructured and replaced by a new standard.
- Standards 3837, 3846, 22707, 23959, had their content changed.
- Standard 19666 had its title and content changed.
- Standard 3841 had its title changed.

- Standards 3831, 22701-22706, and 22708 were designated as expiring.

### Category C and D unit standards will expire at the end of December 2019

#### 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
Subfield	Mechanical Engineering	3	Standards	3837, 22707, 28953, 28962, 28966	4
Standard	22702	3	Standard	28959, 28963	3
Standard	22704	3	Standard	28960, 28965	3

#### Impact on Consent and Moderation Requirements (CMR)

All unit standards will be covered by CMR 0013

#### Impact on registered qualifications

Key to type of impact	
<b>Affected</b>	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
<b>Not materially affected</b>	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following Competenz qualifications are impacted by the outcome of this review and will be updated when they are reviewed in 2015. The classifications and/or standards that generated the status *Affected* are listed in **bold**.

Ref	Qualification Title	Classification or ID
0130	National Certificate in Refrigeration and Air Conditioning (Level 4)	<b>3831, 22701-22706</b>
1242	National Certificate in Split System Air Conditioning (Level 3)	<b>19666, 23959</b>

The following table identifies qualifications developed by other SSBs that are impacted by the outcome of this review. The SSBs have been advised that the qualifications require revision. The classifications and/or standards that generated the status *Affected* are listed in **bold**.

Ref	Qualification Title	Classification or ID	SSB Name
1414	National Certificate in Motor Industry (Automotive Body) (Level 4) with strands in Coachbuilding, Collision Repair, and Refinishing	<b>3831, 22702</b>	NZ Motor Industry Training Organisation (Incorporated)

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

All changes are in **bold**.

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

Engineering and Technology > Mechanical Engineering > Refrigeration and Air Conditioning

ID	Title	Level	Credit	Review Category
3831	Assemble and fabricate commercial refrigeration and/or air conditioning system components	3	10	D
3837	Modify industrial refrigeration systems	3 <b>4</b>	20	B
3841	Commission commercial refrigeration and/or air conditioning systems <b>Commission commercial refrigeration and/or air conditioning systems rated below 50 kilowatts</b>	4	20	B
3846	Maintain commercial refrigeration and/or air conditioning systems	3	20	B
3847	Perform maintenance operations on industrial refrigeration systems <b>Maintain industrial RAC systems</b>	4	20	B
3851	Service commercial refrigeration and/or air conditioning systems	4	20	B
3852	Service industrial refrigeration systems	4	25	B
19666	Demonstrate knowledge of ozone depletion and global warming, and their significance to the RAC industry <b>Demonstrate knowledge of refrigerants and their effect on the environment</b>	3	3	B
22701	Demonstrate knowledge of refrigeration and air conditioning principles and applications	3	15	C
<b>28953</b>	<b>Demonstrate knowledge of refrigerants and their management</b>	<b>4</b>	<b>5</b>	
<b>28970</b>	<b>Demonstrate knowledge of the principles of refrigeration and air conditioning</b>	<b>3</b>	<b>15</b>	
22702	Install and commission commercial refrigeration and air conditioning	3	15	C
<b>28959</b>	<b>Demonstrate knowledge of installation and commissioning procedures for commercial RAC equipment</b>	<b>3</b>	<b>6</b>	

ID	Title	Level	Credit	Review Category
22703	Apply knowledge of electrical and electronics principles in RAC	3	15	C
<b>28961</b>	<b>Demonstrate knowledge of electrical and electronic components used in commercial RAC systems</b>	<b>3</b>	<b>6</b>	
<b>28964</b>	<b>Apply knowledge of electrics and electronics to the installation and maintenance of RAC systems under supervision</b>	<b>3</b>	<b>6</b>	
22704	Maintain and service refrigeration and air conditioning systems	3	20	C
<b>28960</b>	<b>Demonstrate knowledge of commercial RAC system maintenance and servicing</b>	<b>3</b>	<b>7</b>	
<b>28965</b>	<b>Maintain and service commercial RAC systems and equipment under supervision</b>	<b>3</b>	<b>12</b>	
22705	Apply design principles to commercial RAC systems installation	3	15	C
<b>28962</b>	<b>Demonstrate knowledge of design principles for commercial RAC systems</b>	<b>4</b>	<b>5</b>	
<b>28966</b>	<b>Apply design principles to the design of basic commercial RAC systems</b>	<b>4</b>	<b>5</b>	
22706	Assemble commercial refrigeration and/or air conditioning system components under supervision	2	10	C
<b>28967</b>	<b>Fabricate, assemble, and install refrigeration and air conditioning components under supervision</b>	<b>2</b>	<b>6</b>	
22707	Install commercial refrigeration and/or air conditioning systems	3 4	20	B
22708	Apply design principles to commercial RAC systems	4	15	D
23959	Prepare and purge braze piping for refrigeration and air conditioning	3	4	B
<b>28950</b>	<b>Meet requirements for Approved Filler Test Certificate for refrigerants</b>	<b>3</b>	<b>3</b>	<b>New</b>
<b>28951</b>	<b>Meet requirements for Approved Handler Test Certificate</b>	<b>4</b>	<b>5</b>	<b>New</b>
<b>28953</b>	<b>Demonstrate advanced knowledge of refrigerants and their management</b>	<b>4</b>	<b>5</b>	<b>New</b>
<b>28954</b>	<b>Interpret drawings and produce sketches for refrigeration and air conditioning systems and components</b>	<b>3</b>	<b>3</b>	<b>New</b>
<b>28955</b>	<b>Diagnose and rectify faults in commercial RAC systems and equipment under supervision</b>	<b>3</b>	<b>8</b>	<b>New</b>
<b>28956</b>	<b>Maintain and service RAC systems and equipment in controlled temperature transport applications</b>	<b>4</b>	<b>20</b>	<b>New</b>
<b>28957</b>	<b>Install commercial RAC equipment and systems in controlled temperature transport applications</b>	<b>4</b>	<b>20</b>	<b>New</b>
<b>28958</b>	<b>Commission RAC systems for controlled temperature transport applications</b>	<b>4</b>	<b>20</b>	<b>New</b>

<b>ID</b>	<b>Title</b>	<b>Level</b>	<b>Credit</b>	<b>Review Category</b>
<b>28968</b>	<b>Demonstrate knowledge of legislation and codes that relate to work on RAC systems and mechanical building services</b>	<b>3</b>	<b>4</b>	<b>New</b>
<b>28969</b>	<b>Commission commercial RAC systems rated above 50 kilowatts</b>	<b>5</b>	<b>25</b>	<b>New</b>