

Title	Apply design principles to the design of basic commercial RAC systems		
Level	4	Credits	5

Purpose	<p>This unit standard is for people undergoing training to tradesperson level in the refrigeration and air conditioning (RAC) industry. It covers the skills required to size and select components to make up a basic RAC system for a specific purpose.</p> <p>People credited with this unit standard are able to: establish customer and job requirements; and size and select system components.</p>
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Classification	Mechanical Engineering > Refrigeration and Air Conditioning
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Available grade	Achieved
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Guidance Information

- 1 Recommended skills and knowledge
Unit 28962, *Demonstrate knowledge of design principles for commercial RAC systems*, or demonstrate equivalent knowledge and skills.
- 2 Legislation and standards
Health and Safety at Work Act 2015;
Building Act 2004;
Climate Change Response Act 2002;
Electricity (Safety) Regulations 2010;
Electricity Act 1992;
Ozone Layer Protection Act 1996;
AS/NZS 5149:2016 *Parts 1:5 Refrigerating Systems and Heat pumps – Safety and environment requirements*;
AS/NZS 817:2016 *Refrigerants – Designation and safety classification*;
AS/NZS 3000:2007 *Electrical installations (known as the Australian/New Zealand Wiring Rules)*;
and any subsequent amendments.
- 3 References
Althouse, Turnquist, Bracciano. *Modern Refrigeration and Air Conditioning*. 19th edition. Tinley Park, Illinois: The Goodhouse-Willcox Company Inc. ISBN 1-59070-280-8.
Institute of Refrigeration, Heating and Air Conditioning Engineers of New Zealand (IRHACE New Zealand). 2001 *Code of Practice for the reduction of emissions of*

fluorocarbon refrigerants in refrigeration and air conditioning applications. Available from IRHACE, <http://www.irhace.org.nz/>.

4 Definitions

Basic commercial RAC systems are those that would be used for applications such as a small cool room, or split air conditioning system for a commercial office space.

Commercial RAC systems refer to refrigeration systems found in: retail food outlets, truck and shipping-containers, horticultural cool rooms, controlled atmosphere food stores; and air conditioning equipment used in commercial buildings.

Standard industry practice refers to standard and proven industry practices accepted by the refrigeration and air conditioning industry.

Outcomes and performance criteria

Outcome 1

Establish customer and job requirements.

Performance criteria

- 1.1 Customer's requirements that affect system design are identified, evaluated and quantified.
- Range product to be stored, required temperature, required humidity, volume of space to be controlled, location and situation of space to be controlled, required air quality, design of cabinet, frequency of door operations.
- 1.2 Customer's time and cost limitations are identified.
- 1.3 System parameters are established to meet customer requirements.

Outcome 2

Size and select system components.

Performance criteria

- 2.1 Heat load is calculated to meet system parameters.
- 2.2 Site characteristics that may affect design options are identified and investigated.
- 2.3 System specifications needed to meet job requirements are established.
- 2.4 Ratings of components to meet system specifications are established using standard tables and graphs.
- 2.5 Components and refrigerant selected produce the most desirable combination in terms of customer and system requirements.

- 2.6 System and job is documented and presented in a way that meets customer needs in accordance with standard industry practice.

Replacement information	This unit standard, and unit 28962 replaced unit standard 22705.
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Planned review date	31 December 2020
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 June 2015	N/A
Revision	2	22 October 2020	N/A

Consent and Moderation Requirements (CMR) reference	0013
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.