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| <b>Title</b> | <b>Demonstrate knowledge of heat recovery principles</b> |                |          |
| <b>Level</b> | <b>2</b>   | <b>Credits</b> | <b>2</b> |

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| <b>Purpose</b> | People credited with this unit standard are able to: describe heat recovery ventilation principles as they relate to human comfort; and demonstrate knowledge of heat recovery air conditioning principles as they relate to energy efficiency. |
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| <b>Classification</b> | Mechanical Engineering > Refrigeration and Air Conditioning |
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| <b>Available grade</b> | Achieved |
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### Guidance Information

- 1 Legislation and standards relevant to this unit standard:  
 Building Act 2004;  
 Climate Change Response Act 2002;  
 Electricity Act 1992;  
 Electricity Amendment Act 1997;  
 Electricity (Safety) Regulations 2010;  
 Hazardous Substances and New Organisms Amendment Act 2015;  
 Health and Safety at Work Act 2015;  
 Ozone Layer Protection Act 1996;  
 AS/NZS 5149:2016, *Refrigerating systems and heat pumps parts 1:5 Refrigerating systems and heat pumps – Safety and environmental requirements*;  
 AS/NZS ISO 817:2016 *Refrigerants – Designation and safety classification*;  
 and any subsequent amendments.
- 2 References  
 ASHRAE, 2017 *ASHRAE Handbook - Fundamentals*;  
 AS 1668.2-2002, *The use of ventilation and air-conditioning in buildings. Part 2 Ventilation design for indoor air contaminant control*;  
 EECA, *Good practice guide – Heat pump installation (2020)*;  
 BSRIA AG 1/2001.1, *Pre-commission Cleaning of Pipework Systems*, (4<sup>th</sup> ed);  
 BSRIA BG 49/2015 3/89.3, *Commissioning air systems – Application procedures for buildings*;  
 CIBSE, *Commissioning Code Series A - Air Distribution Systems (1996)*;  
 CIBSE, *Commissioning Code Series C - Automatic Controls (2001)*;  
 CIBSE, *Commissioning Code Series R - Refrigeration Systems (2002)*;  
 HVAC Guide DCP DW/143 Heating & Ventilating Contractors Association (UK), *Guide to good practice ductwork leakage testing. 6<sup>th</sup> edition*.

### 3 Definitions

*Approved industry practices* refer to approved codes of practice and standardised procedures accepted by the wider refrigeration and air conditioning industry sectors as examples of best practice.

*ASHRAE* refers to American Society of Heating, Refrigerating and Air-Conditioning Engineers.

*BSRIA* refers to Building Services Research and Information Association.

*CIBSE* refers to Chartered Institution of Building Services Engineers – UK.

*EECA* refers to Energy Efficiency and Conservation Authority.

*Worksite procedures* refer to documented procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site safety procedures, equipment operating procedures, codes of practice, quality assurance procedures, housekeeping standards, procedures to comply with legislative and local body requirements.

### 4 Assessment information

All activities and evidence must be in accordance with worksite procedures and approved industry practices.

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## Outcomes and performance criteria

### Outcome 1

Describe heat recovery ventilation principles as they relate to human comfort.

#### Performance criteria

- 1.1 The effects of air movement, air change rates and environments on human comfort are described.
- 1.2 Relationship between radiant energy and air temperature is described.
- 1.3 Effects of air stratification and equipment location are described.
- 1.4 Effects of low and high humidity are described.

### Outcome 2

Demonstrate knowledge of heat recovery air conditioning principles as they relate to energy efficiency.

#### Performance criteria

- 2.1 The effects on efficiency of an incorrectly powered (kilowatt) air conditioning unit are described.
- 2.2 Heat recovery system efficiency is described.
- 2.3 Briefly describe energy efficiency features.
- 2.4 Maintenance checks to maintain energy efficiency are explained.

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| <b>Planned review date</b> | 31 December 2026 |
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**Status information and last date for assessment for superseded versions**

| Process      | Version | Date           | Last Date for Assessment |
|--------------|---------|----------------|--------------------------|
| Registration | 1       | 26 August 2021 | N/A                      |

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| <b>Consent and Moderation Requirements (CMR) reference</b> | 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](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.