

Title	Integrate mechanical building services equipment and components		
Level	4	Credits	20

Purpose	<p>This unit standard is intended primarily for use in the training of personnel in the mechanical building services industry and covers integration of mechanical building services equipment and components.</p> <p>People credited with this unit standard are able to: prepare for integration of mechanical building services equipment and components; and integrate mechanical building services equipment and components.</p>
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Classification	Mechanical Engineering > Heating, Ventilating, and Air Conditioning
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Available grade	Achieved
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Guidance Information

- Reference and legislation
Health and Safety at Work Act 2015.
NZS 4219:2009, *Seismic performance of engineering systems in buildings*.
- Recommended for entry: Unit 26331, *Read and interpret HVAC system drawings*.
- Definitions
Accepted industry practice refers to approved codes of practice and standardised procedures accepted by the mechanical building services industry sector as examples of best practice.
Integrate means to install components and check details to ensure that they relate correctly to each other to form a functioning system, and that components are installed to conform to system principles for correct operation.
Site measure – the measurement of an onsite situation and production of a detailed sketch to convey accurate dimensions and relevant spatial information to enable the pre-fabrication and installation of equipment.
Specifications refer to documents that include technical standards, documented operating and maintenance procedures or instructions for the system, installation drawings, manufacturers' data, installation instructions, installation programme schedules, material schedules, and site instructions.
Workplace procedures refer to 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, safety procedures, equipment operating procedures, codes of practice, quality management practices and standards, procedures to comply with legislative and local body requirements.

4 Range

Air conditioning and ventilation systems include – large central air conditioning systems, ducted constant-flow rate and variable-flow rate air conditioning systems, packaged and split air conditioning, heat pumps, supply and extract ventilation systems, fume ventilation, industrial ventilation systems.

Chilled water systems include – plain water, brine, glycol systems.

Gas systems – medical gases, LPG, CNG, oxygen, acetylene, compressed air, natural gas.

Hot water heating systems include – low, medium and high temperature systems.

Industrial liquids may include acids, alkalis, detergents, printing inks, food products.

Steam and condensate systems include – systems that use gas, coal, oil, or electricity as fuel sources for the heating system components.

Evidence is required of integration of: a hot water heating system, a chilled water system, an air conditioning and ventilation system, and one from – industrial liquids, steam and condensate systems, gas systems.

5 Assessment information

- a Evidence may be gathered by the candidate over several work sites and may need to be spread between several time periods. There will typically be jobs where part of the job is completed in conjunction with other mechanical building services personnel. The evidence relates to the candidate's own specific work, not work jointly performed with other team members, except where the other team member is checking or assessing the candidate.
- b All activities must comply with applicable workplace procedures and must be consistent with accepted industry practice.
- c Assessment of this unit standard will only be completed after commissioning of the system shows no faults with the integration of equipment and components.

Outcomes and performance criteria
Outcome 1

Prepare for integration of mechanical building services equipment and components.

Performance criteria

- 1.1 Site measures are conducted and checked against design drawings to determine material lengths and sizes, component sizes, and spatial requirements.
- 1.2 System installation drawings are checked against the work site and confirmed as suiting the site conditions, or modifications are implemented and documented as necessary.
- 1.3 Equipment and components are procured and checked against specifications.
- 1.4 Integration of system is coordinated with other trades.

Range building, water, gas, electricity, plumbing.

Outcome 2

Integrate mechanical building services equipment and components.

Performance criteria

- 2.1 Components and equipment are positioned in accordance with specifications.
- 2.2 Installation of equipment and components occurs in the sequence laid down in specifications and to structural and seismic standards.
- 2.3 All penetrations are sealed to maintain the integrity of the passive fire protection of the walls and ceilings.
- 2.4 Integration of equipment and components complies with specifications.
- 2.5 Pipes and ducts are cleaned and flushed.

Replacement information	This unit standard replaced unit standard 3199, unit standard 3200, unit standard 3201, unit standard 3202, unit standard 3203, unit standard 3204, and unit standard 3205.
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Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 July 2010	31 December 2023
Review	2	29 March 2018	31 December 2023
Review	3	1 November 2018	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.