

Field Engineering and Technology**Review of *Heating, Ventilating, and Air Conditioning* unit standards**

Subfield	Domain	ID
Mechanical Engineering	Heating, Ventilating, and Air Conditioning	3199-3205, 3217-3253

Competenz has completed the review of the unit standards listed above.

Date new versions published

July 2010

Planned review date

December 2015

Summary

These unit standards have been reviewed as part of Competenz's planned review cycle.

The review process involved consultation with registered workplace assessors, industry stakeholders from the heating, ventilation and air conditioning (HVAC) sector, and the polytechnic sector.

The review process was conducted in conjunction with the reviews of the National Certificate in Heating, Ventilating, and Air Conditioning (Mechanical Services) (Level 4) [Ref: 0124] and the National Certificate in Heating, Ventilating, and Air Conditioning (Mechanical Services) (Level 5) [Ref: 0897].

The process involved surveying HVAC workplace assessors and using a working group of technical experts to find out what skills and knowledge were relevant for the industry for the next five years.

Main changes were the redevelopment and rationalisation of current unit standards to reflect current industry practice, and the writing of new standards to recognise underpinning knowledge needed for the HVAC sector.

These changes were endorsed by the Refrigeration, Heating, Ventilation, and Air Conditioning Sector Advisory Group in November 2009.

Main changes

- Unit standards 3233, 3238, 3240, 3243, and 3245 have been designated expiring and will not be replaced as they are no longer needed by industry and have low usage.
- Rationalisation and rewriting of a number of unit standards that assess skills in individual HVAC systems into new unit standards that combine multiple systems. These are unit standards 3199-3205, 3217-3232, 3234, 3235, 3237, 3241, 3242, and 3246-3253.
- Changes to the level of unit standard 3236 and the level and credit value of unit standard 3239 as a result of removing the 'under supervision' requirement from these unit standards. This reflects trade level practice in the installation of pipe and duct work.
- The writing of three new unit standards that recognise underpinning knowledge in the principles of HVAC systems for the HVAC sector.

- The writing of a new specialist unit standard on the interpretation of HVAC systems' drawings.
- The writing of three new unit standards to reflect skills in installing pipe and duct work, the integration of HVAC system components, and pre-commissioning and maintenance of HVAC systems under supervision.
- The writing of a new unit standard for servicing of HVAC systems.

The *Registration Criteria for National Qualifications Framework (NQF) Unit Standards* have been reviewed and replaced with the *Quality assurance criteria for the listing of unit standards on the Directory of Assessment Standards*. The changes made to the criteria during this review reflect the replacement of the NQF and the Register with the New Zealand Qualifications Framework (NZQF) and the Directory of Assessment Standards, the inclusion of criteria for grades, and changes to terminology and format of unit standards. The main changes to terminology are that:

- Special Notes were renamed *Explanatory notes*
- Elements were renamed *Outcomes*
- Performance Criteria were renamed *Evidence requirements*.

The unit standards covered by this report have been published in the new format.

Category C and D unit standards will expire at the end of December 2016

Impact on existing accreditations

Current Accreditation for			Accreditation extended to		
Nature of accreditation	Classification or ID	Level	Nature of accreditation	ID	Level
Subfield	Mechanical Engineering	2	Standards	3239	4
				26333	3
	Mechanical Engineering	3	Standards	3236, 3239, 26334	4
Domain	Heating, Ventilating, and Air Conditioning	2	Standards	3239	4
				26333	3
	Heating, Ventilating, and Air Conditioning	3	Standards	3236, 3239, 26334	4
Standard	3241, 3242	2	Standard	26333	3

Impact on registered qualifications

Key to type of impact	
Affected	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
Not materially affected	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 next revised. The standards that generated the status *Affected* are listed in **bold**.

Qualification Title and Reference	Classification or ID
National Certificate in Heating, Ventilating, and Air conditioning (Mechanical Services) (Level 4) [Ref: 0124]	3217, 3218, 3221, 3222, 3234, 3235, 3236, 3237, 3239, 3240, 3241, 3242, 3244, 3246, 3247, 3248, 3249, 3250, 3252, 3253
National Certificate in Refrigeration and Air Conditioning (Level 5) [Ref: 0720]	3232
National Certificate in Heating, Ventilating, and Air conditioning (Mechanical Services) (Level 5) [Ref: 0897]	3199, 3200, 3202, 3203, 3204, 3205, 3217, 3218, 3219, 3220, 3221, 3222, 3223, 3224, 3225, 3226, 3227, 3228, 3229, 3230, 3231, 3232, 3233, 3245, 3248, 3249, 3250, 3253
National Certificate in Mechanical Engineering (Level 4) with strands in Fitting and Machining, General Engineering, Machining, Maintenance Engineering, Toolmaking, and Electricity Supply [Ref: 1262]	3241, 3242, 3243

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 standards that generated the status *Affected* are listed in **bold**.

Qualification Title and Reference	ID	SSB Name
National Certificate in Boatbuilding (Level 4) with strands in Composite Boatbuilding, Wooden Boatbuilding, Alloy Boatbuilding, Steel Boatbuilding, Marine Cabinetmaking, Marine Systems Engineering, Composite Sparmaking, Metal Sparmaking, Marine Rigging, Interior and Exterior Marine Painting, Composite Production Trailer Boat, and Alloy Production Trailer Boats [Ref: 0877]	3240	Boating Industry Training Organisation

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

All changes are in **bold**.

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

Engineering and Technology > Mechanical Engineering > Heating, Ventilating, and Air Conditioning

ID	Title	Level	Credit	Review Category
3199	Integrate hot water heating systems components	4	12	C
3200	Integrate chilled water systems components	4	12	C
3201	Integrate potable hot and cold water systems components	4	10	C
3202	Integrate steam and condensate systems components	4	15	C
3203	Integrate ventilation and air conditioning systems components	4	15	C
3204	Integrate systems components for gas systems	4	9	C
3205	Integrate industrial liquids systems components	4	10	C
26332	Integrate heating, ventilating, and air conditioning systems components	4	30	
3217	Maintain air conditioning and ventilation systems	4	15	C
3218	Maintain hot water heating systems	4	18	C
3219	Maintain steam and condensate systems	4	18	C
3220	Maintain systems for gases	4	10	C
3221	Maintain potable hot and cold water systems	4	10	C
3222	Maintain chilled water systems	4	18	C
3223	Maintain industrial liquids systems	4	10	C
26338	Maintain heating, ventilating, and air conditioning systems	4	25	

ID	Title	Level	Credit	Review Category
3224	Commission air conditioning systems and diagnose faults in these systems	5	20	C
3225	Commission hot water heating systems and diagnose hot water heating systems faults	5	20	C
3226	Commission steam and condensate systems and diagnose steam and condensate systems faults	5	18	C
3227	Commission systems for gases and diagnose gas systems faults	5	18	C
3228	Commission potable hot and cold water systems and diagnose faults in these systems	5	14	C
3229	Commission ventilation systems and diagnose ventilation systems faults	5	11	C
3230	Commission industrial liquids systems and diagnose industrial liquids systems faults	5	14	C
3231	Commission chilled water systems and diagnose chilled water systems faults	5	14	C
3232	Commission control or building management systems and diagnose their faults	5	20	C
26330	Commission heating, ventilating, and air conditioning systems	5	25	
3233	Produce mechanical services schedule of quantities from plans and specifications and prepare tender	5	30	D
3234	Install steel pipe work according to plans and specifications under supervision	3	12	C
3235	Install copper pipe work according to plans and specifications under supervision	3	10	C
3237	Install plastics pipe work according to plans and specifications under supervision	3	10	C
26334	Install pipe-work for heating, ventilating, and air conditioning systems	4	25	
3236	Install stainless steel pipe work according to plans and specifications under supervision	3	12	B
	Install stainless steel pipe-work for heating, ventilating, and air conditioning systems	4		
3238	Manufacture duct work to plans and specifications	3	20	D
3239	Install duct work to plans and specifications under supervision	2	6	B
	Install duct-work for heating, ventilating, and air conditioning systems	4	10	
3240	Install mechanical services plant to plans and specifications under supervision	2	6	D
3241	Install external insulation (pipe work) to plans and specifications under supervision	2	2	C
3242	Install external insulation (duct work) to plans and specifications under supervision	2	1	C
26333	Install external insulation to pipe-work and ducting for heating, ventilating, and air conditioning systems	3	3	

ID	Title	Level	Credit	Review Category
3243	Install cladding to plans and specifications under supervision	3	6	D
3244	Install control components to plans and specifications under supervision Install control components for heating, ventilating, and air conditioning systems	3	6	B
3245	Electrically maintain mechanical services plant	5	6	D
3246	Pre-commission and inspect air conditioning and ventilation systems	4	5	C
3247	Pre-commission and inspect hot water heating systems	4	5	C
3248	Pre-commission and inspect steam and condensate systems	4	5	C
3249	Pre-commission and inspect systems for gases	4	5	C
3250	Pre-commission and inspect potable hot and cold water systems	4	5	C
3251	Pre-commission and inspect materials handling duct work systems	4	5	C
3252	Pre-commission and inspect chilled water systems	4	5	C
3253	Pre-commission and inspect industrial liquids systems	4	5	C
26339	Pre-commission heating, ventilating, and air conditioning systems	4	20	
26327	Install pipe-work and ducting for heating, ventilating, and air conditioning systems under supervision	3	7	New
26328	Integrate heating, ventilating, and air conditioning systems components under supervision	3	7	New
26329	Pre-commission and maintain heating, ventilating, and air conditioning systems under supervision	3	15	New
26331	Interpret heating, ventilating, and air conditioning systems drawings	3	3	New
26335	Demonstrate introductory knowledge of heating, ventilating, and air conditioning	3	12	New
26336	Demonstrate knowledge of the components used in heating, ventilating, and air conditioning systems	3	8	New
26337	Demonstrate advanced knowledge of heating, ventilating, and air conditioning systems	4	12	New
26340	Service heating, ventilating, and air conditioning systems	5	20	New