

Qualification handbook



Introduction

Cert-ain Certification Ltd. is a certification body accredited by the relevant regulatory authorities to offer a range of qualifications for operatives working in the building services engineering sector.

The Cert-ain Certification Ltd. qualifications are designed to be user-friendly for both the assessment centres delivering them and the candidates undertaking them. Our aim is to keep things as simple as possible whilst at the same time, maintaining the highest possible quality standards.

Our qualifications are designed to encourage learning and achievement, providing operatives with the appropriate knowledge and skills to help them progress in their chosen career.

Vented and unvented hot water systems qualification

The aim of this handbook is to provide the necessary information for those wishing to undertake the vented and unvented hot water qualification.

The handbook also aims to provide assessment centres with details of the requirements for delivering the qualification

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Vented and Unvented Hot Water Systems

Summary

The Cert-ain Certification Ltd. Vented and Unvented Hot Water Systems qualification is recognised by both Gas Safe Register and OFTEC.

Individuals holding the Cert-ain Certification Ltd. Vented and Unvented Hot Water Systems qualification shall be recognised as being competent against the assessment criteria listed on pages 4 to 7.

All successful individuals will be issued with a Cert-ain Certification Ltd. certificate of competence and a photo ID card.

Eligibility

Individuals wishing to take the Vented and Unvented Hot Water Systems qualifications should possess domestic ACS **or** OFTEC **or** hold one of the following qualifications:

- N/SVQ Level 2 or 3 in plumbing (or equivalent)
- N/SVQ Level 2 or 3 in heating and ventilating (or equivalent)
- N/SVQ Level 2 or 3 in gas installation/maintenance (or equivalent)
- N/SVQ Level 2 or 3 in oil-fired technical services (or equivalent)

Individuals with any disabilities that may affect their ability to successfully complete the qualifications should inform the assessment centre on application. Assessment centres shall consider any reasonable requests for any aids or equipment that are designed to alleviate any disability providing that the required assessment standard is not compromised.

Training

Assessment centres deliver a training programme focussing on the contents of a number of key 'normative' documents, some of which are freely downloadable from the internet. The training programme is designed to help operatives to prepare for the assessment process.

Reference material

The reference material used for the training and assessment:

- Building Regulations Approved Document G (3)
- Water Supply (Water Fittings) Regulations 1999

Assessment criteria

1	Understand the types and configurations of vented/unvented hot water systems including the design installation requirements
1.1	Explain types of domestic hot water supply systems:
1.1.a	centralised systems
1.1.a.i	unvented hot water systems
1.1.a.ii	open vented hot water systems
1.1.b	localised systems
1.1.b.i	unvented point of use heaters
1.1.b.ii	instantaneous heaters
1.2	Describe types of unvented/vented hot water systems:
1.2.a	indirect storage systems (include water jacketed tube heaters)
1.2.b	direct storage systems
1.2.c	electrically heated
1.2.d	gas or oil fired
1.2.e	small point of use (under sink)
1.2.f	bulk storage heaters (combination tank)
1.2.g	solar thermal hot water systems
1.2.h	combination boilers
1.3	Identify hot water system pipework layout features including systems with secondary circulation:
1.3.a	direct and indirect vented and unvented
1.3.b	direct and indirect cylinders
1.3.c	solar thermal
1.3.d	thermal stores
1.3.e	combination boilers
1.3.f	secondary circulation including:
1.3.f.i	location of pump and type
1.3.f.ii	automated timing device
1.3.f.iii	methods of balancing systems

1.4	State the recommended design temperatures within hot water systems:
1.4.a	hot water storage vessels
1.4.b	hot water delivery
1.4.c	secondary return
1.4.d	point of use including:
1.4.d.i	instantaneous heaters
1.4.d.ii	storage system
1.4.d.iii	fixed bath
1.4.d.iv	basin
1.4.d.v	blending valve installations
1.5	Identify the layout requirements, location and safety features for unvented/vented hot water systems
1.5.a	expansion and temperature relief pipework
1.5.b	vent pipes
2	Know the types and operation of specialist components used in hot water systems
2.1	State methods of preventing stored water from exceeding 100°C
2.2	State the minimum number of independent safety devices required to prevent overheating in unvented hot water systems
2.3	State the expansion rate of water when converted to steam
2.4	Explain the working principle of functional devices in unvented hot water systems
2.4.a	line strainer
2.4.b	pressure reducing valve
2.4.c	check valves
2.4.d	expansion device (vessel or integral to cylinder)
2.4.e	tundish
2.4.f	composite valve

3	Understand the design requirements for hot water systems
3.1	Identify factors affecting the selection of hot water systems for domestic use
3.2	Explain how to minimise bacterial growth in hot water systems
3.3	State the criteria for selecting hot water system and component types:
3.3.a	occupiers needs or usage (max usage of water per person per day)
3.3.b	building layout and features
3.3.c	suitability of system
3.3.d	water efficiency
3.3.e	environmental impact
3.3.f	energy efficiency
3.4	State which regulation applies to the installation of unvented hot water systems of more than 45KW and a capacity of 500 litres
3.5	State which documents should be used when designing domestic hot water systems
4	Know the installation and safety features of hot water systems and components
4.1	State the effects of unbalanced supply pressures in hot water systems
4.2	State the take-off point on a cold water supply to maintain a balanced hot and cold water supply
4.3	State the additional safety components where multiple heat sources exist
4.4	Identify the positioning and fixing requirements of components used in unvented hot water systems:
4.4.a	control thermostat
4.4.b	overheat thermostat
4.4.c	temperature relief valve
4.4.d	line strainer
4.4.e	pressure reducing valve
4.4.f	check valves
4.4.g	expansion device
4.4.h	expansion relief valve
4.4.i	composite valves
4.4.j	tundish arrangements

5	Know the requirements for the installation of cold water components associated with hot water systems
5.1	Describe the installation and siting requirements of cold water cisterns
5.2	Describe the requirements for positioning a cold water pipe in relation to sources of heat
6	Be able to diagnose faults in hot water systems and components
6.1	Carry out diagnosis of hot water systems installation and component faults
6.1.a	thermostats
6.1.b	expansion and pressure vessels
6.1.c	temperature relief
6.1.d	expansion relief
6.1.e	discharge pipework
6.2	Confirm the correct operation of system components and safety valves
6.2.a	thermostats
6.2.b	expansion and pressure vessels
6.2.c	temperature relief
6.2.d	expansion relief
6.2.e	discharge pipework
6.3	Confirm the actions required to rectify the diagnosed faults
7	Know the commissioning requirements of hot water systems and components in accordance with design specifications
7.1	State the checks to be carried out during a visual inspection
7.2	Describe the commissioning procedure for an unvented hot water system
7.3	Describe the procedure for carrying out a soundness test on a hot water system
7.1.a	metallic systems
7.1.b	plastic pipework systems
7.4	Describe the flushing procedure after completion of a soundness test
8	Be able to carry out the commissioning of hot water systems
8.1	Carry out the commissioning of a hot water system
9	Be able to confirm that unvented hot water systems have been serviced in accordance with manufacturer's instructions
9.1	Demonstrate service procedures on an unvented hot water storage system

Assessment process

Operatives will be required to successfully complete a multi-choice examination and a practical assessment that will take between 1-2 hours to complete. The pass-rate is 100%, operatives are allowed up to 3 attempts.

Theory

1. The pass rate for the theory examination is 100%
2. If the candidate does not achieve 100% on the first attempt, they will be allowed a second attempt on at the questions that they got wrong on the first attempt
3. If the candidate does not achieve 100% on the second attempt, providing they have achieved over 80%, they will be orally questioned by the assessor to establish their competence
4. Candidates not achieving 80% after the second attempt or 100% after oral questioning will be deemed to be unsuccessful
5. Unsuccessful candidates will be required to retake the assessment in its entirety

Practical

1. The pass rate for the performance assessment is 100%
2. If the candidate does not achieve 100% on the first attempt, they will be allowed a second attempt at the tasks that they failed to complete successfully
3. If the candidate does not achieve 100% on the second attempt, at the assessors discretion, they will be orally questioned by the assessor to establish their competence
4. Candidates not achieving 100% after oral questioning will be deemed to be unsuccessful
5. Unsuccessful candidates will be required to retake the assessment in its entirety

Assessors

Assessors shall be approved by Cert-ain Certification Ltd. They must be occupationally competent and hold a current Vented and Unvented Hot Water Heating qualification.

Assessors must also hold one of the following assessor qualifications:

- D32 or A1
- Level 3 certificate 'assessing vocationally related achievement' or suitable equivalent

Internal verifiers

Internal verifiers shall be approved by Cert-ain Certification Ltd. They must be occupationally competent and hold or be working towards one of the following internal verifier qualifications:

- D34 or V1
- Level 4 award 'internal quality assurance of assessment processes and practice' or suitable equivalent

Centre approval

All centres delivering the Vented and Unvented Hot Water Heating qualifications are subject to approval and monitoring to ensure that they have the appropriate personnel and facilities in place to deliver a fair and impartial training and assessment process.

The Cert-ain Certification Ltd. external verifier shall carry out quality assurance of the training, assessment and internal verification process. This includes sampling of:

- training and assessment facilities
- candidate records
- assessment decisions

External Verifiers

External verifiers shall hold or be working towards one of the following qualifications:

- D35 or V2
- Level 4 certificate 'external quality assurance of assessment processes and practices' or suitable equivalent

Contact details

If you would like any further information relating to the Cert-ain Certification Ltd. qualifications, please contact:

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