



Summit SKILLS

Minimum Technical Competency of Individuals undertaking Heating Installation work

Contents

	Page
Introduction	3
Definitions	4
Requirements relating to the ability of an individual to design, install, commission and test heating installations	6
Testing	7
Certification and Reporting	7
Insurance	7
Complaints	8
Health and Safety	8
Records	8
Entry Criteria	8
Assessment Strategies	9
Table A	10
Table B	11
Table C	12
Table D	13
Table E	14
Practical Performance Assessment - Design Planning and Commissioning	15
Practical Performance Assessment – Installation and Testing	18
Experienced Heating Installer Programme - Assessment Specification	20
Appendix A – Practical Performance Assessment Guidance (Oil)	24
Technical Reference Documents	25

1. Introduction

This document is intended to set out the basic indicators of training, experience and knowledge that will ensure that an organisation or individual has the appropriate skills to undertake work in a Competent Person Scheme designated in Schedule 2A of the Building Regulations.

The purpose of Competent Person Schemes is to allow approved persons to certify the compliance of controlled work in buildings that are subject to the Building Regulations. This process removes the need to seek approval from building control before work starts.

A person operating under an approved competent person scheme has a duty to comply with all aspects of the Building Regulations not just the core aspects of the work being undertaken.

Evidence of training and assessment alone are not sufficient to prove that an individual has the skills to plan, install and commission work in compliance with the Building Regulations. Therefore, adequate experience and skills knowledge and the ability to apply them in the workplace are an essential part of the entry requirements for competent person scheme registration.

1.1 National Occupational Standards

The standards for this MTC document are based on National Occupational Standards (NOS). NOS are statements of the skills, knowledge and understanding needed in employment and clearly define the outcomes of competent performance. Developed by representatives of employment sectors on a UK-wide basis they are used to provide vocational qualifications (NVQs).

National Vocational Qualifications are work-related, competence-based qualifications. They reflect the skills and knowledge needed to do a job effectively, and show that a candidate is competent in the area of work the NVQ framework represents.

NVQs are based on national occupational standards. Together, they cover all the main aspects of an occupation, including current best practice, the ability to adapt to future requirements and the knowledge and understanding that underpin competent performance and provides a statement that describes what competent people working in the heating sector are expected to be able to do.

Competence involves the application of knowledge in a broad range of varied work activities performed in a wide variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.

These requirements will be taken into account when scheme applicants apply for registration with a Competent Person Scheme provider as they help to define areas of expertise and common competences and creates a consistent approach to registration.

2. Definitions

Appliance = Apparatus intended for household or similar use

Assessed Enterprise = an enterprise which has been assessed in accordance with the requirements of this document as competent, and which possesses a current Assessment Certificate.

Assessor = Individuals, on behalf of a competent persons scheme operator, carrying out an assessment of a persons professional competence as defined by National Occupational Standards, or a recognised Standard Setting Body fuel specific pathway that has been adopted within this MTC document.

Building Regulations = In England and Wales, Building Regulations made under the Building Act 1984 (as amended) and all subsequent Building Regulations (Amendment) Regulations.

Client = the person ordering the work who may or may not be the user of the premises.

Commissioning = The testing and adjustment as necessary of energy efficient fixed building services with effective controls to ensure that they use no more fuel and power than is reasonable in the circumstances. It is recognised that compliance with good installation practice may also require competence to carry out a commissioning activity for aspects of the installation that are an addition to energy efficiency

Competent = in possession of the necessary technical knowledge, skill and experience for the nature of the heating work undertaken and the ability to prevent danger and/or where appropriate injury.

Competent Person Scheme Operator = a body offering self-certification scheme meeting the requirements of this document and listed by Government in Schedule 2A of the Building Regulations 2006, as amended.

Enterprise = each address and trading title of a sole trader, partnership, private limited company, public limited company, public body or other legal entity.

Heating installation work = the design, installation, commissioning and testing of a heating or hot water service system and associated controls.

Individual = a man or a woman carrying out the relevant work.

Inspector = Individuals, on behalf of a competent person's scheme operator, carrying out an inspection of an enterprise, its systems and compliance with scheme registration requirements.

Off site = training/assessment facility.

On site = a location of relevant work-based activity.

Person = an enterprise or individual acting as a business.

Sufficient Involvement = carrying out heating installation work, including as relevant the design, installation, commissioning and testing of that work in accordance with the requirements of the relevant Regulations and British/European Standards.

- 3. Requirements relating to the ability of an individual to design, install, commission and test heating installations.**
- 3.1 The MTC heating criteria define the requirements for the competent individual working directly on the installation for which self-certification is required under the Building Regulations.
- 3.2 The scheme operator must ensure that there is a record of each competent individual capable of completing self-certification and the limits of their competence. Such records may be held on a register or list by the competent person scheme operator or, where their rules allow, by the employing enterprise that is registered within the competent person scheme. In the latter case the register or list must be available for inspection on request by the scheme operator so it could confirm to customers where asked that an individual is competent for the work carried out.
- 3.3 It is recognised that the competent individual may be supported by other individuals who do not meet the criteria (such as fitters mates, apprentices or other specialists) in which case the competent individual must recognise that they have the responsibility for the safety and compliance of the work with the Building Regulations and must have sufficient involvement in the work that they are able to certify this.
- 3.4 The scheme operator must have quality assurance arrangements in place to make sure that each registered enterprise has sufficient competent individuals in place to ensure the compliance of the work undertaken by each registered enterprise, that work is certified only by competent individuals where they have had sufficient involvement to do so and that the work of each competent individual is periodically randomly monitored by the scheme operator to check on its compliance.
- 3.5 The Minimum Technical Competency Group for this sector will remain active and meet as necessary to reflect any changes in Legislation, National Occupational Standards or Technical Standards.

4. Testing

4.1 Test Instruments

- 4.1.1 Each enterprise shall have or have access to a sufficient number of test instruments appropriate to its nature of work that will enable them to accurately carry out and record the outcomes of the following tests:

Test
Hydraulic Pressure test (hot and cold pipework systems) as per the current Water Regulations
Performance test (pressure and flow rates)
Performance test (temperature)
Other appropriate test equipment

- 4.1.2 Test equipment shall be:
- Maintained in clean, working condition, and;
 - Used in a workmanlike manner in accordance with the manufacturers instructions.
- 4.1.3 The enterprise shall have a suitable system in place to ensure that all test instruments used for testing heating installations, whether owned or hired by the enterprise are accurate, consistent and calibrated where appropriate.

5. Certification and Reporting

- 5.1 The enterprise shall issue the appropriate commissioning record to the client; detailing the results of the performance tests carried out as required by the relevant Standards and Regulations.
- 5.2 The assessed enterprise shall issue the appropriate Building Regulations compliance notification in accordance with the relevant Standards and Regulations for all of the heating installation work that it carries out.

6. Insurance

- 6.1 The enterprise shall hold a minimum of £2 million of public (and product) liability insurance (with no exclusion under the product section for advice design and specification) covering all of the work that it carries out within the scope of their registration.

7. Complaints

- 7.1 The assessed enterprise shall maintain a record of all complaints received over at least the previous six years, concerning the compliance with Building Regulations of the Heating installation work it has carried out, together with the details of the action taken to resolve these complaints.

8. Health and Safety

- 8.1 The enterprise shall comply with the requirements of the Health and Safety at Work Act, shall have a written health and safety policy statement where required by law and shall carry out risk assessments where necessary.

9. Records

The assessed enterprise shall hold:

- 9.1 specifications, drawings and commissioning records relating to heating installation work, carried out and in progress as appropriate.
- 9.2 a list of all heating installation work carried out.

10. Entry Criteria

- 10.1 The standards listed within this document are based upon National Occupational Standards (NOS) for heating and the standards set by the Industries standards setting bodies for gas, oil and solid fuel. These are the main roles and responsibilities within defined occupational areas but expressed in outcomes. These outcomes capture the skills, knowledge and understanding required of people to perform competently to the standards required by the industry in the identified roles.
- 10.2 National Occupational Standards provide the most relevant benchmark against which to measure competence for the heating sector. NVQ level 3 includes the relevant system design elements (pipe sizing, heat loss calculations etc.) that would be expected of a Competent Individual.
- 10.3 This document is broken down into systems based modules, which then identify the functions required of an individual working on that system.
- 10.4 However, as many people operating in the industry do not have an NVQ level 3, criterion for “equivalents” have been defined and a skills gap analysis has been undertaken to help formulate a five-year target, to enable those practitioners working in the Building Service sector who do not satisfy the entry requirements, to achieve the level expected.

- 10.5 The heating MTC document sets out an initial *minimum* base line entry criteria for Competent Person Self-Certification scheme operators and requires that people undertaking or involved in self certification should be competent to install, maintain and commission the relevant systems themselves which requires them to have:
1. The relevant skill knowledge
 2. Adequate experience
 3. The ability to apply them in the workplace
- 10.6 The specifications to enable Competent Person Self-Certification scheme operators to assess the competence of applicants for registration are covered on pages 10 to 24.
- 10.7 For the Installation of Unvented Hot Water Storage Systems the installer should hold a current Registered Operative Identity card/certificate 5 years from the date of issue for the installation of domestic unvented hot water storage systems issued by an accredited/certification body.

11. Assessment Strategies

- 11.1 Guidance on the competence of assessors/inspectors and how they should approach the task of assessment against the relevant National Occupational Standards will be given in the assessment strategy document upon completion.

Table A
Matrix of Competencies Required aligned with Schedule 2(A)

Schedule 2A Type of Work Installation of:	Reg.3 Gas Safety (Inst & Use) Regulations	Wet Systems (Table B)	Warm Air Systems (?)	Oil Appliances (Table C)	Oil Storage & Supply (Table C)	Solid Fuel Appliances (Table D)	Electrical MTC	Solar Heating Systems (Table E)
1. a heat-producing gas appliance 14(2)(a) which has a rated heat output of 100 kilowatts or less and which is installed in a building with no more than 3 storeys (excluding any basement) or in a dwelling	✓							
2. heating or hot water service system connected to a heat-producing gas appliance, or associated controls		(✓)#	(✓)#					
3(a) an oil-fired combustion appliance which has a rated heat output of 100 kilowatts or less and which is installed in a building with no more than 3 storeys (excluding any basement) or in a dwelling				✓				
3(b) oil storage tanks and the pipes connecting them to combustion appliances					✓			
3(c) heating and hot water service systems connected to an oil-fired combustion appliance		(✓)#	(✓)#					
4(a) a solid fuel burning combustion appliance which has a rated heat output of 50 kilowatts or less which is installed in a building with no more than 3 storeys (excluding any basement)						✓		
4(b) heating and hot water service systems connected to a solid fuel burning combustion appliance		(✓)	(✓)					
5. a heating or hot water service system, or associated controls, in a dwelling, other than a combustion appliance or its associated controls		(✓)	(✓)					(✓)
6. a heating, hot water service,, or associated controls, in a building other than a dwelling, other than a combustion appliance or its associated controls		(✓)	(✓)					
9. electric heating system, or associated electrical controls							✓	

In addition – all applicants will require the following

To demonstrate understanding of energy efficiency relevant to the work type and where # hold a Recognised Energy Efficiency certificate

To demonstrate an appropriate understanding of the relevant electrical competence for installation and controls.

✓ = Required

(✓) = Required where applicable to the scope of registration

**Table B - Minimum Technical Competency for Wet Heating
Competent Person Scheme Entry Routes**

Entry Routes	Skills Knowledge	Experience / Evidence	Ability to Apply	
			Inspection / Assessment	
			On -Site	Off-Site
1	NVQ Level 3 or equivalent in: Heating and Ventilation Plumbing Gas Oil	12 months (may include period of qualification attainment)	Yes	
Equivalents (in entry route 1 subjects above)		Experience for equivalents is set at 3 years (18 months post qualification) +		
2	Technical Certificate Level 3 C&G Advanced Craft Certificate VRQ level 3	Practical Performance Assessment required in design, planning and commissioning, derived from National Occupational Standards (NOS) for Heating and Ventilation, Plumbing, Gas or Oil; Assessed through a portfolio of evidence (see annex 1)	Yes	
3	OFT 105 E HETAS Course	Practical Performance Assessment required in, planning and commissioning, Installation and testing derived from NOS for Heating and Ventilation, Plumbing, Gas or Oil; Assessed through a portfolio of evidence (see annex 1 and 2)	Yes	
4	NVQ Level 2 Craft Certificate	Practical Performance Assessment required in design, planning & commissioning, derived from NOS for Heating and Ventilation, Plumbing, Gas or Oil; Assessed through a portfolio of evidence and additional Knowledge assessment (#) (see annex 1) # = Domestic Heating Course (IDHEE or equivalent)	Yes	Yes
5	VRQ Level 2	As above (entry route 4) plus Practical Performance Assessment in Installation and testing derived from the NOS for Heating and Ventilation, Plumbing, Gas or Oil; assessed through a portfolio of evidence (see annex 1 and 2)	Yes	Yes
6	No formal Qualification	Completion of the Experienced Heating Installer Programme (inc Practical Performance Assessment) See annex 1, 2, and 3.	Yes	Yes
7	Current Scheme registrant without NVQ level 3	See Entry Routes 1 to 6 above Completion by 30.04.08		
In addition – all applicants will require the following recognised certificates				
<i>Note</i>	A recognised Water Regulations certificate For the installation of unvented cylinders, a current registered operative identity card is also required			

Table C
Minimum Technical Competency for Oil Specific Installations
Competent Person Scheme Entry Routes

Entry Routes	Skills Knowledge	Experience	Ability to Apply	
			Inspection / Assessment	
			On -Site	Off-Site
1	NVQ 0786 Level 3 Suitable to the scope of registration	12 months (may include period of qualification attainment)	Yes	
Equivalents				
2	NVQ 0785 Level 2 Suitable to the scope of registration	Practical Performance Assessment (please see Appendix A)	Yes	
3	OFTEC Scheme Certificates OFT101, OFT102, OFT105E and/or OFT600a suitable to scope of registration		Yes	
4	Other Certificate of Competence suitable to the scope of registration issued under an accreditation to standard ISO17024 against OFTEC criteria document RCP/3		Yes	
<i>Note:</i>	Following registration with a Competent Persons Scheme via entry routes 1 or 2 registrants must attain an ISO17024 certificate of competence.			

Table D
Minimum Technical Competency for Solid Fuel Specific Installations
Competent Person Scheme Entry Routes

Entry Routes	Skills Knowledge	Experience	Ability to Apply	
			Inspection / Assessment	
			On -Site	Off-Site
1	HETAS Course suitable to the scope of registration (Appendix 1 of the Solid Fuel MTC*)	2 Years	Yes	
Equivalents				
2	Course approved by Solid Fuel independent adjudication panel as equivalent to Route 1 (to be formed)	2 Years	Yes	
3	ISO 17024 Certificate of Competence suitable to the scope of registration where ISO 17024 accreditation is against the Solid Fuel MTC*	2 Years	Yes	

* Solid Fuel MTC is the document put forward by HETAS entitled “Requirements for Businesses/Individuals installing Solid Fuel Burning Equipment and systems”.

Table E
Minimum Technical Competency for Solar Heating Installations
Competent Person Scheme Entry Routes

Entry Routes	Skills Knowledge	Experience	Ability to Apply	
			Inspection / Assessment	
			On -Site	Off-Site
1	Course developed in line with the National Occupational Standards, once published.	12 months	Yes	
Equivalents				
2	Certificates covering solar heating, issued by Certification Bodies accredited by UKAS or Awarding Bodies accredited by QCA.	12 months	Yes	
3	Course approved by the Solar Heating independent adjudication panel (to be formed).	12 months	Yes	Yes

Annex 1- Practical Performance Assessment

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Heating

National Occupational Standards for Design

You must provide evidence that you can:	Guidance
Identify and record the customer job requirements	<p>Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components.</p> <p>Types of appliances – secondary heat emitters, radiators, radiant panels, convector heaters.</p>
Identify any areas of the proposed Installation where compliance with industry requirements is necessary	Current codes of practice for system design, current British Standard recommendations, current manufacturers' technical information, current commercially acceptable standards
Prepare a range of design options which comply with key design requirements and confirm on completion of installation, amending if required	System layout (inc positioning of appliances), performance requirements of systems, types of components and appliances, compliance with statutory requirements and recommendations.
Use a range of methods of presentation to explain design options to the customer which meet identified requirements	<p>Use of formal or informal presentation styles</p> <p>Use of presentation equipment – OHP, projection,</p> <p>Use of IT - Computer/E-mail</p>
Obtain customer agreement to the design proposals	<p>Formal and informal agreements</p> <p>Standard forms of contract</p>
Design systems to meet key design requirements	Building type and layout, system layout (inc positioning of appliances), performance requirements of systems, types of components and appliances, compliance with statutory requirements and recommendations.
Carry out design calculations to determine system component requirements	Pipe materials, fittings, fixings, controls, heat exchangers, pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls

Annex 1- Practical Performance Assessment

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Heating

National Occupational Standards for Planning

You must provide evidence that you can:	Guidance
<p>Ensure that all job information essential to the correct installation of the system or system component(s) is on site before job commencement and that you can identify the key features of the system components</p>	<p>Job plans and specifications, component specifications and schedules, work schedules, operating instructions for components, verbal. Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components. Types of appliances – secondary heat emitters, radiators, radiant panels, convector heaters.</p>
<p>Confirm compliance of the proposed installation with industry requirements</p>	<p>Current Codes of Practice, current Standards Recommendations, current Manufacturers' Technical data, current Health and Safety current Commercially agreed standards.</p>
<p>Confirm that the building structure is suitable to accommodate system Components</p>	<p>Provisions for pipe runs, provisions for component or appliance installation, specified finishes, state of readiness for system installation.</p>
<p>Monitor the progress of the job against the installation programme and agree revisions to work programmes with others where modifications and deviations are necessary</p>	<p>Liaison with customer/co-contractor, systems installation stages(s) (first and second fix), testing and commissioning and handover. Customer, co-worker own trade, co-worker other trades and site officials (site manager, clerk of works, statutory inspectors).</p>
<p>Obtain customer approval of any proposed deviation from the original specification</p>	

Annex 1- Practical Performance Assessment

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Heating

National Occupational Standards for Commissioning

You must provide evidence that you can:	Guidance
Confirm that the system or system component installation complies with industry requirements	Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components. Appliance Types – secondary heat emitters, radiators, radiant panels, convector heaters.
Check that input services to the system components are suited for purpose	Water supplies and fuel supplies for new and existing services. Secondary heat emitters, radiators, radiant panels, convector heaters.
Check systems/components for soundness using Industry standard procedures	Codes of Practice, British Standards Recommendations, Manufacturers' Technical data, Health and Safety (safe working practices) and Commercially acceptable standards.
Carry out pre-commissioning tests and checks in accordance with industry requirements	Visual inspections and checks, manufacturers' recommendation for pre-commissioning test procedures, static tests, air tests, earth continuity & polarity tests and system hygiene and charging procedures.
Check that system cleanliness, additives & charging comply with standards	Codes of Practice, British Standards Recommendations, Manufacturers' Technical data, Health and Safety (safe working practices) and Commercially acceptable standards.
Ensure availability of information on the system or component performance & provide to customer for operation	Drawings, specifications & schedules, manufacturers catalogues. Wet secondary heating, dry secondary heating, appropriate control systems and associated components, electrical supply and earthing system. Secondary heat emitters, radiators, radiant panels, convector heaters.
Liaise with other persons during the commissioning process	Customers, co-workers from own & other trades, site officials.
Check the correct function of systems or components and adjust to establish if performance meets design specifications	Wet secondary heating, dry secondary heating, appropriate control systems and associated components, electrical supply and earthing system. Secondary heat emitters, radiators, radiant panels, convector heaters. Circuit or sub-circuit pipeline controls, appliance controls, pump settings.

Annex 2- Practical Performance Assessment

Portfolio of Evidence & On-Site Inspection/Assessment Specification - Heating

National Occupational Standards for Installation and Testing

You must provide evidence that you can:	Guidance
Ensure that safety provisions within the immediate work location conform to the requirements of health and safety legislation	Personal Protective Equipment, potential hazards, adequate ventilation, work in confined spaces, First Aid facilities, fire fighting equipment and access equipment, inc. warning notices.
Ensure that access provision to and from the immediate work location complies with health and safety requirements for the safe movement of the workforce, members of the public and materials	Walkways, access to work at heights, condition of access equipment, warning notices and lighting levels.
Check that input services to the system components are suited to their intended purpose	Water supplies, electrical systems, fuel supplies and earth continuity systems.
Confirm that the customer has job information on all key aspects of the installation process	Simple job plans and specifications, component specifications, work schedules, operating instructions for components and verbal instructions.
Carry out preparatory work to meet the installation requirements of system components	Liaison with other trades, marking out positions of system components, cutting access routes for pipework in building fabric, any pre- installation work for components. Secondary heat emitters, radiators, radiant panels, convector heaters.
Confirm that materials, tools and equipment are fit for their intended purpose	Consumable materials, fittings, system components Tools and equipment for prefabrication and installation purposes. Access equipment.

<p>Position system components</p>	<p>Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters , pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls</p>
<p>Fabricate and or fix system components using methods that conform to industry requirements</p>	<p>Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters , pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls Codes of Practice, British Standards Recommendations, Manufacturers' Technical data, Health and Safety (safe working practices) and Commercially acceptable standards.</p>
<p>Connect system components to systems and input services using methods that conform to industry requirements</p>	<p>Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters , pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls Wet secondary heating, dry secondary heating, appropriate control systems and associated components. Water supplies, electrical systems, fuel supplies and earth continuity systems. Codes of Practice, British Standards Recommendations, Manufacturers' Technical data, Health and Safety (safe working practices) and Commercially acceptable standards.</p>
<p>Confirm the integrity of the installed system, using soundness testing procedures</p>	<p>Wet secondary heating, dry secondary heating, appropriate control systems and associated components. Pressure tests for pipework systems, static pressure tests, air tests, system hygiene and charging procedures.</p>
<p>Take precautionary actions to prevent the unauthorised use of un-commissioned systems and components</p>	<p>Liaison with customer, safe and secure isolation of system, sealing of all open pipework, labelling of controls, liaison with line manager.</p>

Annex 3

Experienced Heating Installer Programme Assessment Specification

National Occupational Standards for Design Knowledge

The candidate must prove knowledge of:	Questions shall cover:
<p>The range of job information required, to carry out design work in new and existing buildings and how to obtain this information from the customer, site drawings and plans. Plus, how to carry out site surveys.</p>	<p>Building type and layout, system layout, performance requirements of systems, types of components and appliances, compliance with statutory requirements & recommendations and the availability/suitability of services (electrical & fuel supply). Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters , pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls</p>
<p>The positioning requirements for components within systems and standard system layouts</p>	<p>System layout (including controls & appliances), performance requirements of systems, types of components and appliances, compliance with statutory requirements & recommendations and the positioning/suitability of mains services.</p>
<p>How to calculate the requirements of system components (size and specification)</p>	<p>Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters , pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls</p>
<p>How to identify design options that meet both the customer, industry & site requirements and the methods of presenting information to customers (drawings, specifications and quotations).</p>	<p>Use of formal or informal presentation styles, formal and informal agreements and standard forms of contract. Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components. Appliance Types– secondary heat emitters, radiators, radiant panels, convector heaters.</p>
<p>How information technology (IT) may be used in presenting design information and how to obtain customer agreement to progress selected design options.</p>	<p>Codes of Practice, British Standards Recommendations, Manufacturers' Technical data, Health and Safety (safe working practices) and Commercially acceptable standards. Use of presentation equipment – OHP, projection, Use of IT - Computer/E-mail</p>

Experienced Heating Installer Programme Assessment Specification

National Occupational Standards for Planning Knowledge

The candidate must prove knowledge of:	Questions shall cover:
The system types and their intended functions (system components & layout)	<p>Job plans and specifications, component specifications and schedules, work schedules, operating instructions for components, verbal.</p> <p>Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components.</p> <p>Appliance Types– secondary heat emitters, radiators, radiant panels, convector heaters. Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters, pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls</p>
The regulations governing system design, installation and operation	Current Codes of Practice, current Standards Recommendations, current Manufacturers' Technical data, current Health & Safety and current commercially agreed standards.
The installation requirements for systems (installation sequences & liaison with others)	Provisions for pipe runs, provisions for component or appliance installation, specified finishes, state of readiness for system installation.
How to monitor the progress of the job against the installation programme and agree revisions to work programmes with others where modifications and deviations are necessary	<p>Liaison with customer/co-contractor, systems installation stages(s) (first and second fix), testing and commissioning and handover.</p> <p>Customer, co-worker own trade, co-worker other trades and site officials (site manager, clerk of works, statutory inspectors).</p>
How to calculate the size of system components (pipework and appliances)	Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters, pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls

Experienced Heating Installer Programme - Assessment Specification

National Occupational Standards for Installation and Testing Knowledge

The candidate must prove knowledge of:	Questions shall cover:
<p>The sources of information on the preparatory work necessary for the system or component installation</p> <p>Industry practices and work standards for fabricating and installing system components. Plus regulations and recommendations governing safety in the workplace.</p> <p>The fixing requirements for system components to conform to system design</p> <p>How to confirm that the input services are adequate and the procedures required for connecting to input services and existing systems</p> <p>The care/maintenance requirements of tools & equipment and checks for safe condition and the equipment necessary to provide safe access to heights or confined spaces.</p> <p>The range of tests used to confirm the soundness of systems and components and how to use the range of soundness test equipment.</p>	<p>Personal Protective Equipment, potential hazards, adequate ventilation, work in confined spaces, first aid facilities, fire fighting equipment, access equipment and warning notices.</p> <p>Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters, pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls Current Codes of Practice, current Standards Recommendations, current Manufacturers' Technical data, current Health & Safety and current commercially agreed standards.</p> <p>Current Codes of Practice, British & European Standards, current Manufacturers' Technical data and safe working practices.</p> <p>Water supplies, electrical systems, fuel supplies and earth continuity systems. Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components.</p> <p>Consumable materials, fittings, system components, tools & equipment for prefabrication and installation purposes and access equipment.</p> <p>Visual inspections, manufacturers recommendations, pressure tests for pipework systems, static pressure tests, air tests and system hygiene & charging procedures. Liaison with customer, safe & secure isolation of system, sealing of all open pipework, labelling of controls and liaison with line manager, supervisor or inspector.</p>

<p>The procedures for establishing correct system/component performance</p>	<p>Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components.</p>
<p>The routines and sequences for commissioning systems & components</p>	<p>Appliance Types– secondary heat emitters, radiators, radiant panels, convector heaters. Circuit or sub-circuit controls, appliance controls, pump settings.</p>
<p>The points in the commissioning process where cooperation with others may be required</p>	<p>Types of systems – wet secondary heating, dry secondary heating, appropriate control systems and associated components.</p>
<p>Completing commissioning documentation & handover procedures (end user)</p>	<p>Customer, co-worker own trade, co-worker other trades and site officials (site manager, clerk of works, statutory inspectors).</p>
<p>The potential hazards that could arise from de-commissioning activities and the required checks before de-commissioning</p>	<p>Drawings, specifications & schedules, manufacturers' specifications or catalogues and contact specifications for commissioning.</p>
<p>Measures to prevent systems being brought into operation</p>	<p>Current Codes of Practice, British & European Standards, current Manufacturers' Technical data, safe working practices and current commercially accepted standards.</p>
<p>How to safely collect and dispose of system components that may be hazardous to health or the environment</p>	<p>Liaison with customer, safe & secure isolation of system, sealing of all open pipework and labelling of controls.</p>
	<p>Current Codes of Practice, safe working practices and commercially accepted standards. Pipe materials, fittings, fixings, controls, secondary heat emitters, radiators, radiant panels, convector heaters, pumps, motorised valves, storage vessels, cylinders, cabling and electrical components, appliances and all associated controls.</p>

APPENDIX

A. Practical Performance Assessment Guidance (Oil)

Level 2 routes:

Mandatory plus	Units 3, 7, 8 & 11
System and equipment installation	Units 4 & 5
or	
Oil storage system installation	Units 11a & 6

Level 2 units:

Unit 3	Maintain environmental good practice
Unit 4	Install systems and equipment
Unit 5	Pre commission and De commission systems and equipment
Unit 6	Pre commission and De commission oil storage
Unit 7	Maintain a safe working environment
Unit 8	Develop and maintain effective working relationships
Unit 11	Install oil storage systems (domestic)
Unit 11a	Install oil storage systems (commercial/industrial)

Level 3 routes:

Mandatory plus	Units 3, 7, 8 & 9
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Level 3 routes: Mandatory plus	Units 3, 7, 8 & 9
Design and install systems and equipment	Units 2, 12, 17, 18 & 19
Design and install Oil storage systems	Units 2, 10, 15, 16 & 20
Service and commission	Units 10, 13, 14 & 19

Level 3 units:

Unit 2	Specify programs for working on systems and equipment
Unit 3	Maintain environmental good practice
Unit 7	Maintain a safe working environment
Unit 8	Develop and maintain effective working relationships
Unit 9	Contribute to the improvement of products and services
Unit 10	Diagnose and rectify faults in oil storage systems
Unit 12	Design oil fired systems
Unit 13	Service and commission oil fired systems
Unit 14	Diagnose and rectify faults in appliances
Unit 15	Install complex oil storage systems
Unit 16	Design oil storage and supply system
Unit 17	Install complex oil fired systems
Unit 18	Pre commission and De commission systems and equipment
Unit 19	Diagnose and rectify faults in oil fired systems
Unit 20	Pre commission and De commission oil storage

B. Technical Reference Documents

- A1. The Individual shall hold or have access to current editions, including all amendments, of the documents (or recognised equivalent documents) listed in the following table.

Technical Reference Documents in relation to
Water Regulations Guide
Building Regulations Document L
Building Regulations Document J
Domestic Heating Compliance Guide
BS 5449: Specification for forced circulation hot water central heating systems for domestic premises
BS 8303 -1: Installation of domestic heating and cooking appliances burning solid mineral fuels. Installation of domestic heating and cooking appliances burning solid mineral fuels. Specification for the design of installations
BS 8303-2: Installation of domestic heating and cooking appliances burning solid mineral fuels. Installation of domestic heating and cooking appliances burning solid mineral fuels. Specification for installing and commissioning on site
BS 8303-3: Installation of domestic heating and cooking appliances burning solid mineral fuels. Recommendations for design and on site installation
OFTEC Book 3 Oil Boilers and Oil Storage
OFTEC Book 5: Oil firing for Vaporising burners And/or OFTEC Book 2: Oil firing for Pressure Jets
BS EN 12831: Heating systems in buildings. Method for calculation of the design heat load