Chapter

8.3

Space heating systems

This chapter provides guidance for space heating design and equipment that provide heating solutions, including low or zero carbon sources (LZC). Other LZC systems that follow the general principles of this chapter may also be acceptable, subject to specific agreement with NHBC.

This chapter contains the following sections:

Chapter

8.3.1

Space heating

Space heating relates to the design of home heating to achieve comfort conditions.

8.3.1.1 Requirements

Also see: Chapter 2.1

When space heating is provided, it shall comply with the Technical Requirements and ensure safe operation. Issues to be taken into account include:

1) relevant standards

2) space heating provision.

8.3.1.1.1 Relevant standards

Relevant standards for space heating design used in domestic hydronic systems include:

BS 5410	Code of practice for oil firing
BS EN 14336	Heating systems in buildings. Installation and commissioning of water based heating systems
BS 8303	Installation of domestic heating and cooking appliances burning solid mineral fuels
BS EN 12828	Heating systems in buildings. Design for water-based heating systems
BSRIA guide BG 4/2011	Underfloor Heating and cooling
CIBSE guide A	Environmental design
CIBSE	HVDH Domestic heating design guide

Space heating and cooling appliances, including all components and controls, should be of a type approved by the relevant authority, including:

- gas appliances — assessment by an appropriate independent technical approvals authority accepted by NHBC confirming compliance with UK CA, UK NI or CE marking
- solid fuel — Solid Fuel Association, Heating Equipment Testing and Approval Scheme
- electricity — British Electrotechnical Approvals Board
- oil — OFTEC
- LZC technologies — should have a current certificate confirming satisfactory assessment by an appropriate independent authority acceptable to NHBC (systems, products and installations assessed through Microgeneration Certification Scheme (MCS) will generally be acceptable to NHBC)
- certification and test documentation should be made available to NHBC upon request
- other certification bodies or test documentation may be acceptable where they are considered by NHBC to be a suitable alternative.

8.3.1.1.2 Space heating provision

The provision of whole home or central heating is discretionary. Where provided by infrared radiant panels, the system should be designed by a specialist and recognised standards. Where provided by hydronic systems or convector panel heaters, it should be designed in accordance with Tables 1, 2 and 3, recognised standards and:

- the number of air changes per hour from kitchens and bathrooms should account for any mechanical ventilation
- where rooms contain open flued appliances, the rate of air change used for the design should be increased in accordance with BS EN 12831
- room ventilation rates should be in accordance with recognised standards and guidance eg CIBSE HVDH Domestic heating design guide or other approved by NHBC (see Table 1)
- design temperatures should be verified by calculations and not by performance tests
- the main living room should have a heating appliance or a heat output as part of a whole home heating system
- heat loss calculations should be based on external temperature in line with Tables 2 and 3
- the heating designs must include allowances, where applicable, for thermal bridging
- the design may need to use elevated temperatures to take into account the frail, elderly or infirm.

Table 1: Air change rates per hour (CIBSE HVDH Domestic heating design guide)

Room	ACH	Room	ACH	Room	ACH
Lounge/sitting room	0.5	Cloakroom/WC	1.5*	Internal room/corridor	0.0
Living room	0.5	Toilet	1.5*	Bedroom/study	0.5
Breakfast room	0.5	Utility room	0.5*	Landing	0.5
Dining room	0.5	Study	0.5	Bathroom	0.5*
Kitchen	0.5*	Games room	0.5	Shower room	0.5*
Family/breakfast room	0.5*	Bedroom	0.5	Dressing room	0.5
Hall	0.5	Bedroom with ensuite	1.0	Storeroom	0.5

* Where mechanical extract ventilation is to be installed, and the value exceeds the natural infiltration, due allowance must be made for the air extracted from any connecting room or corridor as detailed in Approved Document F.

Table 2: Room temperatures, new build insulated to current standards

Room	Temp °C	Room	Temp °C	Room	Temp °C
Lounge/sitting room	21	Cloakroom/WC	21	Internal room or corridor	21
Living room	21	Toilet	21	Bedroom/study	21
Breakfast room	21	Utility room	21	Landing	21
Dining room	21	Study	21	Bathroom	22
Kitchen	21	Games room	21	Shower room	22
Family/breakfast room	21	Bedroom	21	Dressing room	21
Hall	21	Bedroom with en suite	21	Storeroom	21

Table 3: Outdoor design temperatures

Region	Latitude	Outdoor design temperature °C	Ground reference temperature (winter mean °C)
Scotland and Isles	56-60°N	-5	+5.5
Northern England and Northern Ireland	54-56°N	-4	+6.0
Midlands, Wales and ROI	52-54°N	-3	+6.5
London, SW England	51-52°N	-2	+7.0
Southern England	50-51°N	-1	+7.5

Chapter

8.3.2

Gas heating appliances

Appliances using natural gas or LPG to provide space heating and water to a dwelling.

8.3.2.1 Compliance

Also see: Chapter 2.1

Gas heating appliances shall comply with the Technical Requirements. Issues to be taken into account include:

1) **relevant standards**
2) **product certification**
3) **operative competency.**

8.3.2.1.1 Relevant standards

Gas heating appliances should comply with relevant standards including where applicable:

BS 6798	Specification for selection, installation, inspection, commissioning, servicing and maintenance of gas-fired boilers of rated input not exceeding 70kW net
BS 5440-1	Flueing and ventilation for gas appliances of rated input not exceeding 70kW — flueing
BS 5440-2	Flueing and ventilation for gas appliances of rated input not exceeding 70kW — ventilation

8.3.2.1.2 Product certification

Gas heating appliances should hold a current assessment by an appropriate independent technical approvals authority accepted by NHBC confirming compliance with UK CA, UK NI or CE marking. A Declaration of Conformity detailing the standards the product complies with and documents should be available on request.

8.3.2.1.3 Operative competency

Gas heating appliances and associated equipment shall be installed by competent operatives who are:

- familiar with the system being installed, and
- members of a class of persons approved by the HSE (Gas Safe registered).

8.3.2.2 Provision of information

Designs and specifications shall be produced in a clearly understandable format, include all relevant information and be distributed to the appropriate personnel.

Provision of information is important as it allows for energy-efficient use of the building and common methods adopted to prevent overheating.

Clear and fully detailed drawings should be available on site to enable work to be carried out in accordance with the design. Design and specification information should be issued to site supervisors, relevant specialist subcontractors and suppliers, and include the following information:

- fixing schedule
- a full set of current drawings
- indication of which manufacturer and/or installer is responsible for each system and interface
- commissioning schedule
- manufacturers' specifications
- interface details
- on-site testing requirements
- type and spacing of clips and fixings
- type and location of ancillary components, including those used for fire safety and acoustic purposes
- commissioning certificates
- central heating pipe runs
- underfloor heating pipe runs
- specification for controls.

8.3.2.3 System design

Gas heating systems shall be designed to ensure satisfactory performance. Issues to be taken into account include:

1) **location**
2) **system**
3) **compatibility**
4) **performance**
5) **acoustics.**

8.3.2.3.1 Location

Gas heating appliances, including ancillary components, should be located and identified in accordance with the manufacturer's recommendations. Consideration should be given to:

- coastal locations see Clause 8.2.1 definitions
- height of building and flue materials.

8.3.2.3.2 System

Gas heating systems should be designed in accordance with the manufacturer's recommendations and appropriate standards.

Each system incorporating a flue should generally be supplied from one manufacturer as a package, not as individual components or materials. However, where components from more than one manufacturer are used, they should be compatible to ensure satisfactory performance.

8.3.2.3.3 Compatibility

Gas heating systems should be installed so as not to adversely affect the performance of the building to which they are fixed, and in accordance with the manufacturer's recommendations.

8.3.2.3.4 Performance

Gas heating systems designed to contribute towards space and water heating should be designed in accordance with the performance requirements in Chapters 8.4 Ventilation and 8.6 Installation and commissioning.

8.3.2.3.5 Acoustics

Design and location should take account of:

- internal and external noise
- vibration.

8.3.2.4 Building integration

Also see: Chapter 8.6

Gas heating appliance systems installation shall be securely fixed and not adversely affect the weather resistance of the building.

Notching, drilling or chasing of structural components to accommodate service pipes or cables should either comply with Clause 8.6.2 or be designed by an engineer in accordance with Technical Requirement R5.

Fixings, supports, bracketry and mounting frames should:

- accommodate all static and dynamic loads in accordance with the manufacturer's recommendations
- have adequate protection against corrosion (grade 316 stainless steel is recommended for coastal locations)
- be compatible or isolated where two metals are to be joined to prevent bimetallic corrosion.

Aluminium and aluminium alloys should not come into contact with cementitious material.

All interfaces between the building and equipment should ensure adequate weather resistance, and be sealed to limit air leakage and prevent moisture from reaching the interior or any part of the structure that could be adversely affected by its presence. The envelope should be weatherproofed using appropriate flashings and fixings. Weatherproofing details that rely solely on sealant are not acceptable.

8.3.2.5 Fixing

Also see: Chapter 2.1

Gas heating systems shall be securely fixed using durable materials.

Fixings should comply with the types listed in Table 1.

Table 1: Materials suitable for fixings

Fixing material	Guidance
Phosphor bronze	NA
Silicon bronze	NA
Stainless steel	BS EN ISO 3506
Mild steel	Coatings to BS EN ISO 2081, BS EN ISO 2082, BS EN 1461 or other appropriate treatment in accordance with BS EN ISO 12944 or BS EN ISO 14713
Aluminum alloy	BS EN 573 and BS EN 755
Stainless steel	BS EN 10088
Mild steel	BS EN 10346
Other materials	Assessed in accordance with Technical Requirement R3

Materials that comply with recognised standards, which provide equal performance to (or better than) those above, are also acceptable.

The type, size, number, position and fitting tolerance of fixings should be in accordance with the manufacturer's recommendations.

Issues that should be taken into account include:

- the provision of suitable locking nuts and washers
- the isolation of dissimilar metals
- the isolation of aluminium from cementitious material.

8.3.2.6 Access

Appropriate arrangements shall be provided for the purposes of cleaning, inspection, maintenance and repair or replacement of gas heating systems.

Safe access should be provided to systems to enable the cleaning, inspection, maintenance and repair or replacement. Access should be provided in accordance with the manufacturer's recommendations.

For installation in a loft or roof void, guidance is provided in Clause 7.2.12.

8.3.2.7 Electrical installation requirements

Also see: Clause: 8.1.6

The electrical installation shall be in accordance with relevant regulations.

Electrical installations should comply with BS 7671 Requirements for Electrical Installations.

The electrical installation should be capable of being isolated from all other electrical sources when required, for maintenance or testing. An unswitched shuttered socket or double pole fused spur with 3.5mm separation will generally be acceptable.

8.3.2.8 Handling and storage

Materials, products and systems shall be handled, stored and protected in a satisfactory manner to prevent damage, distortion, weathering and degradation.

Gas heating systems should be:

- transported, lifted, handled and stored in accordance with the manufacturer's recommendations
- delivered in sequence to avoid storage
- protected to avoid the risk of damage.

8.3.2.9 Sequence of work

Gas heating systems shall be installed in accordance with a suitable schedule.

To ensure performance, gas heating systems and ancillary components should be installed in a logical and timely sequence in accordance with the manufacturer's recommendations.

Chapter

8.3.3

Heat pumps

Systems which transfer heat from low energy sources.

Figure reference table

Figure Reference Table 8.3.3			
Fig No	**Title/Description**	**Chapter**	**Page**
Figure 1	Heat pump schematic	8.3.3	10
Figure 2	Air source heat pump	8.3.3	10
Figure 3	Ground source heat pump	8.3.3	10
Figure 4	Alternative heat sources (boreholes and ground collectors)	8.3.3	10

The most common sources are ground, outdoor air and exhaust air (see Figures 1 to 4).

Figure 1: Heat pump schematic

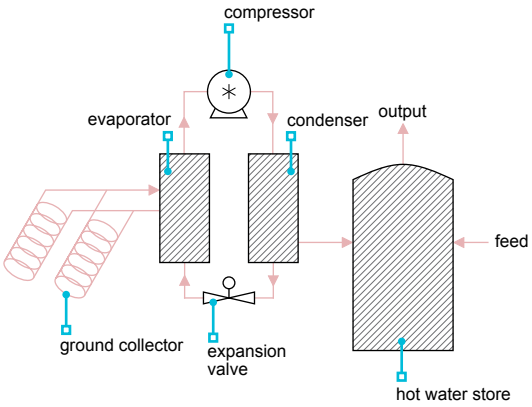


Figure 2: Air source heat pump

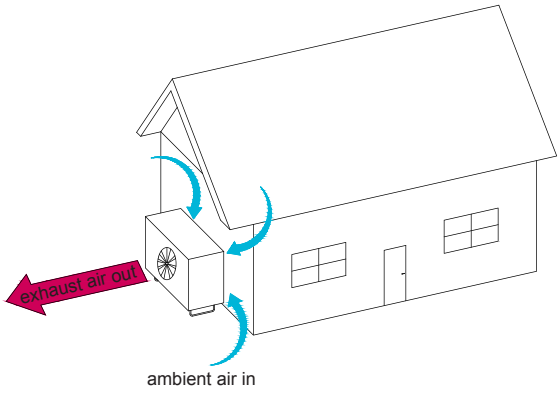


Figure 3: Ground source heat pump

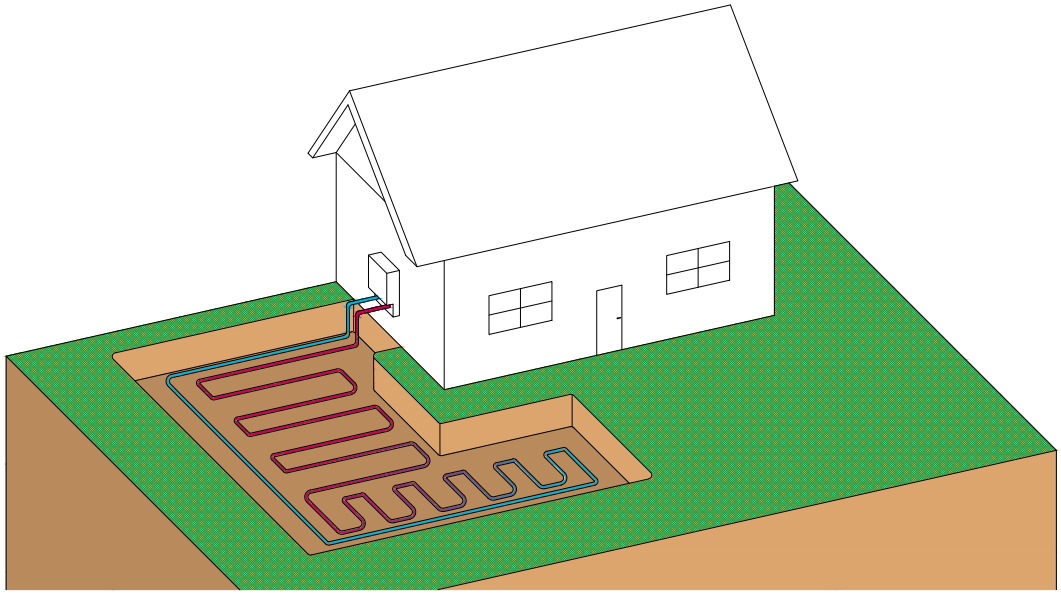
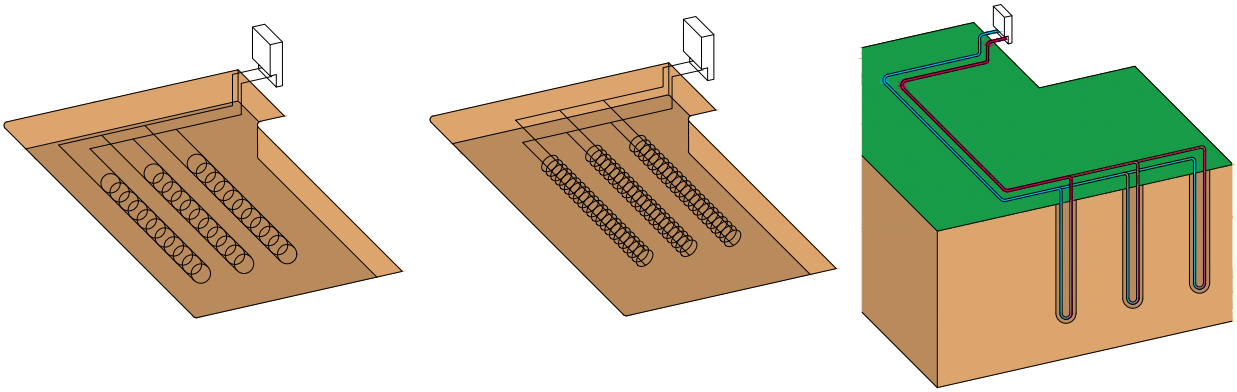


Figure 4: Alternative heat sources (boreholes and ground collectors)



Definitions for heat pumps

Coastal locations	A site within a distance of 500m from the general coastline of the United Kingdom.
Controls	Used to operate and/or regulate the system, and may be electrical or mechanical.
Exclusion zone	An area where entry is restricted during periods when maintenance is in progress, to prevent risk of injury or loss of life.
Exhaust air heat pump	A subset of air-source heat pumps, typically combined with mechanical ventilation to extract and reuse heat from the exhaust air.
Ground collectors	The component of a ground source heat pump system which absorbs heat from the ground. Collectors can be installed either horizontally or vertically in the ground. They may also be incorporated into proprietary foundation systems.
Low or zero carbon (LZC) technologies	A term applied to renewable sources of energy, and also to technologies which are significantly more efficient than traditional solutions, or which emit less carbon in providing heating, cooling or power.
Monobloc heat pump	A type of heat pump in which all of its components are in one unit; in the case of air-source heat pumps, this will usually be located outside the dwelling.
Open loop system	A heat pump system that extracts water from an underground source, pumps it through a heat exchanger and returns it underground.
Performance	The manner or quality of functioning for a material, product or system.
Refrigerant pipework	Carries refrigerant between the indoor and outdoor unit of a split system; normally made of copper and must be insulated and protected from damage.
Renewable energy	Energy from naturally available sources that can be replenished, including energy from the sun, wind and tides, and from replaceable matter such as wood or other plant material.
Split system heat pump	A type of heat pump in which the condenser is located indoors, the evaporator is located outdoors, and the two are linked by refrigerant pipework.
Switchgear	The combination of electrical switches, fuses and/or circuit breakers used to isolate electrical equipment.

8.3.3.1 Compliance

Also see: Chapter 2.1

Heat pumps shall comply with the Technical Requirements. Issues to be taken into account include:

1) **relevant standards**
2) **product certification**
3) **operative competency.**

8.3.3.1.1 Relevant standards

Heat pumps should comply with relevant standards, including, where applicable:

BS EN 14511-1	Air conditioners, liquid chilling packages and heat pumps for space heating and cooling with electrically driven compressors for space heating and cooling. Terms and definitions
BS EN 14511-2	Air conditioners, liquid chilling packages and heat pumps for space heating and cooling with electrically driven compressors for space heating and cooling. Test conditions
BS EN 14511-3	Air conditioners, liquid chilling packages and heat pumps for space heating and cooling with electrically driven compressors for space heating and cooling. Test methods
BS EN 14511-4	Air conditioners, liquid chilling packages and heat pumps for space heating and cooling with electrically driven compressors for space heating and cooling. Requirements
BS EN 16147	Heat pumps with electrically driven compressors requirements for domestic hot water
BS EN 12102-1	Determining the sound power level of compressors
BS EN 14825	Calculation of seasonal performance
BS EN IEC 62108	Requirements for assessing the products capacity for long term operation in general open-air climates
MIS 3005-D	Microgeneration Certification Scheme requirements for the supply, design of heat pump systems
MIS 3005-I	Microgeneration Installation Standard for heat pumps installation
Fluorinated gas (F gas)	Guidance for users, producers and traders
MCS CC 002	Micro generation heat pump compliance certificate commissioning standard
MCS 007	Heat pump standard

8.3.3.1.2 Product certification

Heat pump technologies should have current certification confirming satisfactory assessment by an appropriate independent authority acceptable to NHBC.

Products that are certified through the Microgeneration Certification Scheme (MCS) will generally be acceptable to NHBC. Certification and test documentation should be made available to NHBC upon request.

Other certification bodies or test documentation may be acceptable where they are considered by NHBC to be a suitable alternative.

8.3.3.1.3 Operative competency

Heat pump systems should be installed by companies, organisations or operatives who are:

- competent and familiar with the system being installed, and
- MCS Certified, or
- certified to a standard acceptable to NHBC.

Where installers are not certified by MCS the operative should still hold the relevant qualifications such as:

- completed an approved British Plumbing Employers Council (BPEC) training course for heat pump systems and low temperature hot water heating systems
- electrically qualified
- F gas registered where required
- registered to install unvented cylinders.

8.3.3.2 Provision of information

Designs and specifications shall be produced in a clearly understandable format, include all relevant information and be distributed to the appropriate personnel.

Provision of information is important as it allows for energy-efficient use of the building and common methods adopted to prevent overheating.

Clear and fully detailed drawings should be available on site to enable work to be carried out in accordance with the design. Design and specification information should be issued to site supervisors, relevant specialist subcontractors and suppliers, and include the following information:

- fixing schedule
- a full set of current drawings
- indication of which manufacturer and/or installer is responsible for each system and interface
- commissioning schedule
- manufacturers' specifications
- interface details
- on-site testing requirements
- type and spacing of clips and fixings
- type and location of ancillary components, including those used for fire safety and acoustic purposes
- commissioning certificates
- central heating pipe runs
- underfloor heating pipe runs
- specification for controls.

8.3.3.3 System design

Also see: Chapter 8.3.1

Heat pumps systems shall be designed to ensure satisfactory performance. Issues to be taken into account include:

1) **location**
2) **system design**
3) **compatibility**
4) **performance**
5) **acoustics.**

8.3.3.3.1 Location

Heat pumps, including ancillary components, should be located and identified in accordance with the manufacturer's recommendations.

Heat pumps, when sited in coastal locations, should be suitable for the environment. Manufacturers' recommendations should be followed detailing maintenance requirements, or any ancillary coatings that are acceptable if not factory treated, to prolong the life of the heat pump.

8.3.3.3.2 System design

Heat pump systems should be designed in accordance with the manufacturer's recommendations, certification scheme requirements and appropriate standards.

Each system should generally be supplied from one manufacturer as a package, not as individual components or materials. However, where components from more than one manufacturer are used, they should be compatible to ensure satisfactory performance.

The heat pump selected should provide not less than 100% of the calculated design space heating power requirement at the winter design condition and include any energy required for defrost cycles. Any supplementary electric heating shall only operate when the conditions are outside of the standards.

- all heat loss calculations should be in accordance with recognised standards and guidance, eg CIBSE HVDH Domestic heating design guide or other approved by NHBC
- fabric heat loss calculations should be based on the building design and thermal conductivity of the materials from which the element is constructed
- the heating designs must include allowances where applicable for thermal bridging
- design mean water temperature (MWT) of 42.5°C, the design can use an MWT lower than this
- the number and sizing of heat emitters eg radiators or size of underfloor system, must be sized to the design MWT
- the system pipework or underfloor heating must be sized to the design MWT
- the heat pump must have a minimum coefficient of performance of 3.0 for space heating
- the heat pump must have a minimum seasonal coefficient of performance of 2.7
- the heat pump must control the pump operation
- the heat pump must control any outdoor fan operation
- the heat pump must control the defrost cycle for the external air side
- weather compensation or internal temperature control must be adopted with all heat pumps
- where the dwelling contains other heat sources, they should all be controlled from a singular control unit.

8.3.3.3.3 Compatibility

Heat pump systems should be installed so as not to adversely affect the performance of the building to which they are fixed, and in accordance with the manufacturer's recommendations.

Multiple systems should be compatible with each other.

8.3.3.3.4 Performance

Heat pump systems designed to contribute towards space and water heating should be designed in accordance with the performance requirements in Chapters 8.1 Internal services and 8.3 Space heating systems.

8.3.3.3.5 Acoustics

The design and location should take account of:

- internal and external noise
- vibration
- the effect on neighbouring properties, particularly the positioning of the heat pump in relation to openings.

8.3.3.4 Pipes, insulation and protection from cold

Also see: Chapter 8.6

All pipework and insulation, including refrigerant pipework, shall ensure adequate performance and be designed to prevent freezing.

Materials used for pipes and insulation should be suitable for the intended purpose and provide satisfactory performance for the life of the system. Pipes should comply with relevant codes and standards or be independently assessed for their intended use in accordance with Technical Requirement R3. Insulation materials should be inert, and durable, and should not be adversely affected by moisture or vapour. They should also comply with relevant codes and standards or be independently assessed for their intended use in accordance with Technical Requirement R3.

Where there is a risk of pipes freezing, they should be insulated, particularly when at, or close to, ground level.

Refrigerant pipework connecting split systems should be of refrigerant quality copper pipe or other material as recommended by the manufacturer. The pipe should be insulated, and the insulation should incorporate a vapour control layer to prevent ice build-up.

Air source systems should incorporate an automatic defrost cycle and suitable condensate drainage.

8.3.3.5 Ground collectors

The installation of ground collectors shall take structural and environmental factors into account.

The depth and layout of ground collectors should be specified to avoid freezing of adjacent ground. Where open loop systems are proposed, consultation with the appropriate environment agency should be made and may require one or more of the following:

- a licence to investigate groundwater
- an abstraction licence
- a discharge consent.

Excavations for the installation of ground collectors should not adversely affect aquifers, foundations, drainage, water supply pipes and other services. Design should take account of local planning authority guidance, including excavations that are close to trees and hedgerows.

Ground collectors should be protected and tested prior to backfilling.

8.3.3.6 Building integration

Also see: Chapter 8.6

Heat pump system installation shall be securely fixed and not adversely affect the weather resistance of the building.

Foundations and anchor points for stand-alone heat pump technologies should be designed by an engineer in accordance with Technical Requirement R5 to withstand the structural forces acting upon them.

The structure to which the heat pump technology is attached should be assessed according to its ability to accept the loadings and prevent detrimental effects arising from movement or vibration.

The design of the structure should take account of:

- the self-weight of the heat pump components
- imposed loads
- wind loads
- dynamic loading (where relevant).

Notching, drilling or chasing of structural components to accommodate service pipes or cables should either comply with Clause 8.6.2.7 or be designed by an engineer in accordance with Technical Requirement R5.

Fixings, supports, bracketry and mounting frames should:

- accommodate all static and dynamic loads in accordance with the manufacturer's recommendations
- have adequate protection against corrosion (grade 316 stainless steel is recommended for coastal locations)
- be compatible or isolated where two metals are to be joined to prevent bimetallic corrosion.

Aluminium and aluminium alloys should not come into contact with cementitious material.

All interfaces between the heat pump and the building should ensure adequate weather resistance, and be sealed to limit air leakage and prevent moisture from reaching the interior or any part of the structure that could be adversely affected by its presence. The envelope should be weatherproofed using appropriate flashings and fixings. Weatherproofing details that rely solely on sealant are not acceptable.

8.3.3.7 Fixing

Heat pump systems shall be securely fixed using durable materials.

Fixings should comply with the types listed in Table 1.

Table 1: Materials suitable for fixings

Fixing material	Guidance
Phosphor bronze	NA
Silicon bronze	NA
Stainless steel	BS EN ISO 3506
Mild steel	Coatings to BS EN ISO 2081, BS EN ISO 2082, BS EN 1461 or other appropriate treatment in accordance with BS EN ISO 12944 or BS EN ISO 14713
Aluminum alloy	BS EN 573 and BS EN 755
Stainless steel	BS EN 10088
Mild steel	BS EN 10346
Other materials	Assessed in accordance with Technical Requirement R3

Materials that comply with recognised standards, which provide equal performance to (or better than) those in Table 14, are also acceptable.

The type, size, number, position and fitting tolerance of fixings should be in accordance with the manufacturer's recommendations.

Issues that should be taken into account include:

- the provision of suitable locking nuts and washers
- the isolation of dissimilar metals
- the isolation of aluminium from cementitious material.

8.3.3.8 Access

Appropriate arrangements shall be provided for the purposes of cleaning, inspection, maintenance and repair or replacement of heat pump systems.

Safe access should be provided to the heat pump systems, including switchgear and controls. This is to enable the cleaning, inspection, maintenance and repair of systems. Access should be provided in accordance with the manufacturer's recommendations.

8.3.3.9 Electrical installation requirements

Also see: Clause: 8.1.6

The electrical installation shall be in accordance with relevant regulations.

Electrical installations should comply with BS 7671 Requirements for Electrical Installations.

The electrical installation should be capable of being isolated from all other electrical sources when required, for maintenance or testing.

Lightning protection must be installed as directed by the equipment manufacturer. Also see Clause 8.1.6.15.

8.3.3.10 Handling and storage

Materials, products and systems shall be handled, stored and protected in a satisfactory manner to prevent damage, distortion, weathering and degradation.

Heat pump systems should be:

- transported, lifted, handled and stored in accordance with the manufacturer's recommendations
- delivered in sequence to avoid storage
- protected to avoid the risk of damage.

8.3.3.11 Sequence of work

Heat pump systems shall be installed in accordance with a suitable schedule.

To ensure performance, heat pump systems and ancillary components should be installed in a logical and timely sequence in accordance with the manufacturer's recommendations.

Chapter

8.3.4

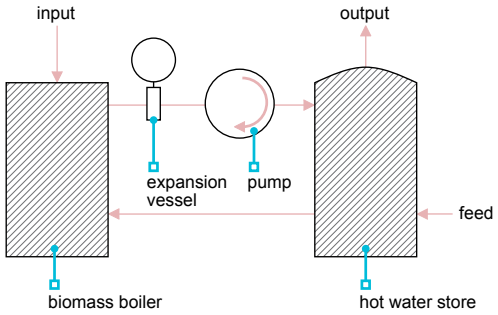
Biomass

Systems which burn wood pellets or chips for space and/or water heating.

Figure reference table

Figure Reference Table 8.3.4			
Fig No	**Title/Description**	**Chapter**	**Page**
Figure 1	Biomass schematic	8.3.4	18

Figure 1: Biomass schematic



8.3.4.1 Compliance

Also see: Chapter 2.1

Biomass systems shall comply with the Technical Requirements. Issues to be taken into account include:

1) **relevant standards**
2) **product certification**
3) **operative competency.**

8.3.4.1.1 Relevant standards

Biomass systems should comply with relevant standards, including, where applicable:

BS EN 303-5	Heating boilers — Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500kW. Terminology, requirements, testing and marking
BS EN 12809	Residential independent boilers fired by solid fuel. Nominal heat output up to 50kW. Requirements and test methods
BS EN 13240	Roomheaters fired by solid fuel. Requirements and test methods
BS EN 14785	Residential space heating appliances fired by wood pellets. Requirements and test methods
MCS 008	Product Certification Scheme Requirements: Biomass
MGD 006	Percussive Events Guidance
MIS 3004	Requirements for MCS contractors undertaking the supply, design, installation commissioning and handover of solid biofuel heating systems
MCS CC 001	Biomass Compliance Certificate Template

8.3.4.1.2 Product certification

Biomass technologies should have current certification confirming satisfactory assessment by an appropriate independent authority acceptable to NHBC.

Systems, products and installations that are assessed through the Microgeneration Certification Scheme (MCS) will generally be acceptable to NHBC. Certification and test documentation should be made available to NHBC upon request.

Other certification bodies or test documentation may be acceptable where they are considered by NHBC to be a suitable alternative.

8.3.4.1.3 Operative competency

Biomass systems should be installed by operatives who are:

- competent and familiar with the system being installed, and
- MCS Certified, or
- certified to a standard acceptable to NHBC.

Where installers are not MCS accredited, they should still hold the relevant qualifications:

- HETAS qualified
- electrically qualified.

8.3.4.2 Clean air act

Biomass boilers installed in smoke controlled areas shall comply with relevant legislation.

Biomass boilers to be installed within a smoke controlled area should comply with the Clean Air Act 1993 or Clean Air (Northern Ireland) Order 1981. Installations also need to consider any local air quality management plans that are in effect and comply with the requirements.

8.3.4.3 Fuel storage

Also see: HVCA Guide to good practice: Installation of biofuel heating (TR/38)

Fuel storage for biomass boilers shall be suitable for the installation.

Fuel stores should have appropriate access for delivery.

- fire detection and extinguishing equipment where elevated dust levels are expected
- volume to take account of peak load and period of demand
- fire resistance and separation to prevent fire and gases entering other parts of the building.

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