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## Overview

This standard is about designing and sizing systems for new installations or conversions in domestic settings. It can apply to any type of fuel gas or combinations of fuel gas including, but not restricted to, natural gas, LPG, blended or 100% hydrogen.

This standard covers the work activities of identifying job requirements, carrying out heat loss calculations, designing systems, completing paperwork and dealing with any problems.

This standard should be used alongside any of the standards listed below when they are used for new installations:

- EUSDSG6 Upgrade, modify and convert systems to alternative fuel sources in the gas industry
- EUSDSG8 Install, service, repair and remove gas water heating and wet central heating
- EUSDSG9 Install, service, repair and remove gas space heating appliances
- EUSDSG10 Install, service, repair and remove gas fired ducted air heaters

This standard is for gas engineers who work in domestic settings.

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## Performance criteria

### *You must be able to:*

1. Identify, record and agree customer's job requirements in appropriate formats
2. Calculate room volumes and the surface area of any windows in spaces to be heated
3. Establish the type of material and heating systems above and below spaces to be heated and the number and type of external walls and windows, taking account of any insulating material
4. Carry out heat loss calculations using appropriate heat loss calculation methods for the space in which you are working
5. Calculate the heat output required for spaces based on accurate heat loss information
6. Confirm that systems and their design are compatible with any existing heat, power, temperature control and/or water supply systems they are to be connected to
7. Confirm that selected systems and their design are suitable for space's heat, power, temperature control and water requirements
8. Confirm that the integrity of building structures are suitable for selected systems and associated equipment, accessories and components
9. Identify and record any key structural features that could affect installations, advising property occupiers of your findings
10. Check that the proposed siting of systems, components and appliances meet manufacturers' and industry standards and legislative requirements for location, siting and clearance
11. Confirm that all necessary input services meet appliance manufacturers' and industry standards' requirements for installations
12. Minimise damage to customer property and building features throughout all stages of design and sizing activities
13. Complete and submit all relevant documentation and paperwork in line with industry standards and legislative requirements
14. Resolve problems within own area of responsibility and competence in accordance with approved procedures
15. Advise of any delays to the work, unresolved problems, unsafe situations and required remedial actions to those who require the information

## Knowledge and understanding

### *You need to know and understand:*

- 1.The calculations required to size heating equipment, including outdoor design and indoor design temperatures
- 2.How to calculate temperature difference
- 3.The way in which heat flows through building assemblies, including ventilation and the rankings from insignificant to significant
- 4.Assumptions when calculating heat loss
- 5.Calculations required through below grade walls and floors and single and double glazing to determine heat loss
- 6.Heat loss calculation methods and the factors that must be taken into account when carrying out heat loss calculations
- 7.How to interpret diagrams and drawings
- 8.How to size, select and specify suitable system, controls and pipework arrangements
- 9.The operation, applications, advantages and limitations of different systems and their associated equipment, components and accessories in relation to the working environment, the building's heat, power, temperature control and/or water provision and requirements
- 10.Appropriate industry standards, building regulations and other legislative requirements relevant to system design and component positioning
- 11.How to confirm that the integrity of building structures are suitable for systems and their associated equipment, accessories and components
12. Methods of working which protect building décor, customer property and existing systems and components
- 13.The steps to take when problems arise with work activities
- 14.Job management structures and methods of reporting and recording job progress or problems delaying progress
- 15.How to complete documentation and records and which statutory body to submit it to

EUSDSG4

Design and size systems for new installations or conversions in domestic settings



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<b>Developed by</b>	Energy & Utility Skills
<b>Version Number</b>	3
<b>Date Approved</b>	01 Jan 2022
<b>Indicative Review Date</b>	01 Jan 2025
<b>Validity</b>	Current
<b>Status</b>	Original
<b>Originating Organisation</b>	Energy & Utility Skills
<b>Original URN</b>	EUSDSG3b
<b>Relevant Occupations</b>	Domestic Gas Engineers
<b>Suite</b>	Downstream Domestic Gas Installation and Maintenance
<b>Keywords</b>	job requirements, heat loss calculations, system, design, paperwork, fuel, gas, natural gas, LPG, blended fuel, 100% hydrogen, solar thermal, ground source heat pumps, air source heat pumps, biomass, micro combined heat and power, micro-CHP, domestic CHP,

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