

## Overview

This standard is about upgrading, modifying or converting heating systems to alternative fuel sources. This applies to:

- conversion to gas from other energy sources such as oil or LPG
- modification from natural gas to alternative heat sources which could include, but are not restricted to, solar thermal, ground source heat pumps, air source heat pumps, biomass, micro combined heat and power (micro-CHP/ domestic CHP), combined cooling heat and power (CCHP).

This standard covers the work activities of installing, exchanging and removing systems and components including the disconnection, de-commissioning and commissioning that is involved.

This standard should be used in conjunction with:

- EUSDSG5 Prepare to work on gas systems or appliances in domestic settings; and
- EUSDSG15 Carry out gas tightness testing and check system safety in small settings

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

## Performance criteria

### *You must be able to:*

1. Measure and mark out locations for fitting and fixing selected system equipment, accessories and components in accordance with system design and manufacturers' instructions
2. Carry out modification processes in accordance with manufacturers' specification, industry standards, safety schemes, regulations, recognised industry practices, work standards routines and sequences
3. Check that conditions within gas and electricity systems will permit safe de-commissioning and commissioning
4. Use designated safe isolation procedures and warning notices to prevent the unauthorised use of un-commissioned or de-commissioned gas appliances, gas systems, electrical systems and components
5. Select and use the correct tools, test equipment and other equipment for each stage of the work being carried out
6. Liaise with other contractors involved with modifications or conversions at relevant times during the process
7. Assemble, fix and connect system components to meet requirements of plans
8. Minimise damage to customer property and building features throughout all stages of the work
9. Confirm the correct interaction between hybrid heating and hot water systems
10. Confirm ventilation and condensate disposal systems for modified or converted systems are working in line with industry standards and manufacturers' instructions
11. Use industry standard checks and testing procedures to confirm the integrity of modified or converted systems
12. Use appropriate test equipment and other to checks to ensure that gas system operating pressures, gas rate and combustion performance meet industry standards and manufacturers' requirements
13. Check modified or converted systems and components function safely and operate in accordance with manufacturers' instructions
14. Ensure safe disposal of any accessed bottles, tanks or oil in line with government guidelines
15. Complete and submit all relevant documentation and paperwork in line with industry standards and legislative requirements
16. Instruct property occupiers on the correct operation of modified or converted systems and provide them with their copy of system literature
17. Resolve problems within own area of responsibility and competence in accordance with approved procedures
18. 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 range of alternative heat sources and their compatibility with gas systems including LPG, oil, hydrogen, blended hydrogen, bio gas, solar thermal, ground source heat pumps, air source heat pumps, biomass, micro combined heat and power (micro-CHP/ domestic CHP), combined cooling heat and power (CCHP), rainwater harvesting, grey water recycling
2. The possible uses of other environmental technologies such as solar photo voltaic, wind energy systems, micro hydro
3. 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
4. Appropriate industry standards and regulations relevant to positioning, fixing, connecting, testing and commissioning environmental technology systems and converting systems from oil and LPG
5. How to confirm that the integrity of building structures are suitable for systems and their associated equipment, accessories and components
6. Tests, checks and testing equipment to confirm the integrity, suitability, performance, operating pressure, gas rate, gas combustion and safe functioning of modified or converted systems, including any flues/chimneys and ventilation systems
7. Procedures for checking performance of modified and converted systems including pressure, flow rate and temperature
8. Procedures to check the interaction between hybrid heating and hot water systems
9. Safe isolation methods, tests, and procedures for temporary and permanent de-commissioning of gas and electricity systems, components and appliances including use of temporary continuity bonds, non-contact voltage detectors, voltage indicators, proving units, multimeters
10. Measures to prevent un-commissioned and de-commissioned appliances or systems being brought into operation
11. Methods of working which protect building décor, customer property and existing systems and components
12. The roles and responsibilities of other contractors involved in modifications and conversions
13. Safe processes and procedures for applying tightness testing and purging, safe isolation and electrical testing to systems and components to ensure safe functioning
14. How to safely collect and dispose of system contents that may be hazardous to health or the environment
15. The steps to take when problems arise with work activities
16. Job management structures and methods of reporting and recording

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job progress or problems delaying progress

17. How to complete documentation and records and which statutory body to submit it to including building regulation self certification

18. System and appliance handover and demonstration procedures

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