EUSDSG3.6

Gas tightness testing and direct purging

Overview

This national occupational standard is for gas engineers who will be carrying out tightness testing and direct purging of small(domestic) natural gas installations. This standard also covers the work activities of planning, de-commissioning and commissioning gas installations.

Performance criteria

You must be able to:

Plan and prepare work activities for tightness testing and direct purging

1. Produce a risk assessment and method statement which incorporates safety provisions in the work site, access to the work site, movement of the workforce, members of the public, and the movement and safe storage of materials, tools and equipment for the job
2. Survey the work site, pre-tightness testing and direct purging, for any damage or defects to existing building features and record it
3. Advise the property occupier of any defects found and agree the planned work
4. Protect the work site and the building fabric against possible damage being caused during the tightness testing and direct purging process
5. Confirm the siting of the gas supply and the provision of ventilation meets the requirements for tightness testing and direct purging
6. Check and confirm all materials, tools and test equipment necessary for the de-commissioning, tightness testing and direct purging process are available as required and are fit for purpose
7. Confirm that the gas supply, earthing supply and the provision of ventilation meet the industry standards' requirements for the installation
8. Carry out all necessary checks and tests to confirm the gas supply meets the industry requirements for the installation
9. Check existing installation for any unsafe appliances and system components and apply the gas industry unsafe situations procedures as required

Tightness testing and direct purging of gas systems and components to industry standards and manufacturers' instructions

10. Confirm the complete pipework installation complies with the manufacturers' specification and industry standards
11. Carry out preparatory work for tightness testing and direct purging to meet industry standards
12. Check that conditions within the gas system will permit safe tightness testing and direct purging
13. Select and use the correct tools and equipment for tightness testing and direct purging activities
14. Measure, calculate and record gas system installation volumes for tightness testing and direct purging activities
15. Ensure ventilation for tightness testing and direct purging activities meets industry standards' requirements
16. Remove existing gas components as required

17. Ensure existing gas systems are clean and free of debris
18. Carry out the tightness testing and direct purging process minimising damage to customer property and building features
19. Use tightness testing procedures to confirm the integrity of the system to industry standards
20. Follow approved procedures if the installation fails the tightness test
21. Use purging procedures to confirm the safe supply of gas to the installed gas system and appliances
22. Instruct the property occupier on the correct operation of the gas system, valves and components and provide them with their copy of the any literature
23. Take precautionary actions to prevent the unauthorised use of un-commissioned gas appliances, gas systems and components by isolation procedures and use of warning notices

Use and communicate data and information to carry out de-commissioning, tightness testing and direct purging to industry standards

24. Liaise with the property occupier and other people who will be affected by the work during the planning, de-commissioning and tightness testing and direct purging processes to minimise disturbance to the job
25. Use normative documents, industry standards, British Standards and information from manufacturers' instructions applicable to the gas system and the appliance to ensure the work is done to the specification
26. Advise of any delays to the work, unsafe situations and required remedial actions to those who require the information
27. Check that the customer is satisfied with the finished job
28. Complete records and documentation confirming the safe tightness testing and direct purging of gas systems and components
29. Complete gas system de-commissioning records

Resolve problems within own area of responsibility and competence which could affect de-commissioning, tightness testing and direct purging

30. Rectify problems within own area of responsibility and competence and report deficiencies in gas and earthing input services
31. Resolve problems in accordance with approved procedures when: a)pre- tightness testing and direct purging checks and tests reveal gas

system or component defects
b)gas systems and components being tightness tested and purged do not meet design requirements
c)the gas system and components cannot be restored to full performance

Knowledge and understanding

You need to know and understand:

General Knowledge

1. Regulations and guidance governing health and safety in the workplace, environmental protection and the use of risk assessments
2. Legislation covering the general responsibilities of the operative for their own safety and that of others
3. The limits of your own autonomy and responsibility

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4. The health, safety and environmental factors which need to be incorporated in risk assessment for the domestic tightness testing and direct purging process
5. Safe access and working at heights including providing safe access to work at heights, or in confined spaces
6. The methods of working which protect the building décor, customer property and existing systems and components
7. The tools, equipment, materials and components required for tightness testing and direct purging processes
8. The care and maintenance requirements of tools and equipment, and checks for safe condition
9. How to safely secure and store tools, equipment, materials and components to minimise loss or wastage
10. The potential hazards that could arise from all tightness testing and direct purging activities and the checks to be carried out before work takes place
11. The steps to take should materials, components, tools and equipment not be available at the site to commence the tightness testing and direct purging activity
12. How and where to access and correctly interpret the required information, including normative documents, industry standards guidance documents, British Standards and manufacturers' instructions applicable to the appliance, to ensure the work is done to the specification and industry standards
13. Safe isolation methods, tests, and procedures to de-commission gas systems or components
14. The procedures for temporary and permanent de-commissioning of gas systems including use of temporary continuity bonds
15. The precautions to ensure that de-commissioned gas systems do not prove a safety hazard
16. Measures to prevent de-commissioned gas systems being brought

into operation utilising safety and warning notices
17. The need to liaise with others whose procedures or routines may be affected by the suspension of the gas system operation
18. The points in the de-commissioning, tightness testing and direct purging process where co-operation and liaison with other trades and property occupier may be required
19. The industry practices and work standards for fabricating and installing gas pipework, valves, systems and components to comply with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British Standards and Building Regulations
20. The types of pipe materials and fittings suitable for carrying gas including steel, malleable iron, copper, pliable corrugated stainless steel tubing, polyethylene & lead
21. The types of pipe fittings suitable for carrying gas including capillary, compression, push-fit, union joints & screwed joints
22. The industry practices and work standards for jointing materials and fittings suitable for carrying gas, including connecting to lead composition pipes
23. The positioning and fixing requirements for gas pipework, valves, systems and components to comply with the manufacturers' specification, industry standards, Gas Safety (Installation & Use) Regulations, British Standards and Building Regulations
24. The procedures and work methods for connecting:
a) to input services including; gas, earthing systems and ventilation
25. b) pipework, valves and components to both new and existing gas systems and appliances
26. How to confirm that the gas supply and ventilation are adequate for de-commissioning, tightness testing and direct purging of the gas system, appliance(s) and components
27. How to measure, calculate and record gas system installation volumes for tightness testing and direct purging activities
28. The test equipment and legislative requirements for applying tightness testing to gas systems, appliances and components
29. Tightness testing procedures to confirm the integrity of newly installed gas system and, where applicable, new and existing appliances
30. Tightness testing procedures to confirm the integrity of the existing installed gas system and, where applicable, new and existing appliances to ensure the installation doesn't exceed the maximum permissible pressure drop

31. Recognition of medium pressure regulator sets where the maximum operating pressure (MOP) at the outlet of the emergency control valve (ECV) is above 75mbar but not exceeding 2bar and, whether a meter inlet valve (MIV) is fitted
32. Tightness testing procedures to confirm the integrity of gas systems where the maximum operating pressure (MOP) at the outlet of the emergency control valve (ECV) is above 75mbar but not exceeding 2bar and, where a meter inlet valve (MIV) is fitted or, no meter inlet valve is fitted
33. The industry practices and procedures for tracing and repairing gas escapes
34. The process and procedures, equipment and legislative requirements for applying direct purging of gas systems, appliances and components –
35. The routines and sequences for direct purging of gas systems, appliances and components
36. The routines and sequences for commissioning gas systems, valves and components to industry standards
37. Measures to prevent un-commissioned gas systems being brought into operation utilising safety and warning notices
38. How to complete all tightness testing and direct purging documentation and records to be left with the property occupier
39. The system handover procedures and demonstrating the operation of gas systems and components to end users
40. The steps to take when problems arise in the work activities
41. Job management structures and methods of reporting and recording job progress or problems delaying progress
42. How to safely collect and dispose of system contents that may be hazardous to health or the environments
43. How to isolate unsafe gas appliances, gas systems and components and application of the gas industry unsafe situations procedure

Glossary

“Cookers” refers to Freestanding, Built In, Slide Under, Hotplates, Grilles, Range Cookers, and Dual Fuel Cookers

“Leisure Appliances” refers to Greenhouse Heaters, BBQ’s, Patio Heaters, Gas Flambeaux, and Outdoor Gas Lighting

“Small natural gas installations” refers to Natural Gas Systems and Components downstream of an emergency control valve (ECV). The installation shall have; a maximum operating pressure (MOP) at the outlet of the ECV not exceeding 2bar, an operating pressure (OP) at the outlet of the primary meter of 21mbar (nominal), a nominal bore of not greater than 35mm, a maximum rated capacity through the primary meter of 16m3/h (U16), and a maximum installation volume (IV) supplying an individual dwelling or non domestic premises of 0.035m3

“Work Site” refers to the area where the work will take place and all areas affected by the works

‘Services and Systems’ refers to water, central heating, gas, electricity supply, condensate disposal, chimneys and ventilation systems

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