

Maintaining gas distribution systems and equipment

Overview

This standard identifies the competences you need to carry out corrective maintenance activities on gas distribution systems and equipment, in accordance with approved procedures. You will be required to maintain a range of gas distribution systems, which will include mains, cylinder and tanked gases. This will involve dismantling, removing and replacing faulty or damaged components, including valves, couplings, motors, regulators, boosters, manifolds, storage devices, sensors, gaskets and seals, filters, gauges and indicators, electrical wiring, safety devices, pipework and hoses. You will be expected to apply a range of dismantling and assembly methods and techniques, such as labelling of components to aid the assembly, dismantling components requiring pressure techniques, torque loading, and setting, aligning and adjusting components.

Your responsibilities will require you to comply with organisational policy and procedures for the maintenance activities undertaken, and to report any problems with the maintenance activities, or the tools and equipment used that you cannot personally resolve, or that are outside your permitted authority, to the relevant people. You must ensure that all tools, equipment and materials used in the maintenance activities are removed from the work area on completion of the activities, and that all necessary job/task documentation is completed accurately and legibly. You will be expected to work with minimal supervision, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide a good understanding of your work, and will provide an informed approach to applying gas distribution maintenance procedures. You will understand the dismantling and reassembly methods and procedures used, and their application. You will know how the equipment functions, the purpose of the individual components and associated defects, in adequate depth to provide a sound basis for carrying out the maintenance activities, correcting faults and ensuring that the repaired equipment functions to the required specification and remains compliant with all standards and regulations. You will also have sufficient knowledge of these components to ensure that they are fit for purpose and meet the specifications, thus providing a sound basis for carrying out reassembly.

You will understand the safety precautions required when carrying out the maintenance activities, especially those for isolating the equipment. You will be required to demonstrate safe working practices throughout, and will understand your responsibility for taking the necessary safeguards to protect yourself and others in the workplace.

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Performance criteria

You must be able to:

1. work safely at all times, complying with health and safety legislation and other relevant regulations, directives and guidelines
2. follow the relevant maintenance schedules to carry out the required work
3. carry out the maintenance activities within the limits of your personal authority
4. carry out the maintenance activities in the specified sequence and in an agreed timescale
5. report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
6. complete and store all relevant maintenance documentation in accordance with organisational requirements
7. dispose of waste materials in accordance with safe working practices and approved procedures and leave the work area in a safe condition

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Knowledge and understanding

You need to know and understand:

1. the health and safety requirements of the area in which the maintenance activity is to take place
2. the isolation and lock-off procedures or permit-to-work procedure that applies to the gas system being maintained
3. the specific health and safety precautions to be applied during the maintenance procedure, and their effects on others
4. hazards associated with carrying out maintenance activities on gas systems (such as fire, explosion, respiratory problems, stored pressure, misuse of tools, using damaged or badly maintained tools and equipment, not following laid-down maintenance procedures), and how to minimise them and reduce any risks
5. the importance of wearing protective clothing and other appropriate safety equipment (PPE) during the maintenance process
6. how to obtain and interpret drawings, specifications, manufacturers' manuals and other documents needed in the maintenance process
7. the procedure for updating drawings and other documentation on gas distribution systems
8. the procedure for obtaining replacement parts, materials and other consumables necessary for the maintenance activities
9. the importance of following the correct procedures for purging and de-commissioning components
10. organisational policy on the repair/replacement of components during the maintenance process
11. the sequence to be adopted for the dismantling/reassembly of various types of gas assemblies
12. methods of checking components are fit for purpose, how to identify defects and wear characteristics, and the need to replace 'lived' items (such as filters, seals and gaskets)
13. how to make adjustments to components/assemblies to ensure they function correctly
14. the basic principles of how the equipment functions, its operation sequence, the working purpose of individual units/components and how they interact
15. the methods used to label and identify different pipework systems (including colour coding and warning signs)
16. the different types and applications of measuring and monitoring equipment used
17. how to check tools and equipment are free from damage or defects, are in a safe and usable condition, and are configured correctly for their intended purpose
18. the generation of maintenance documentation and/or reports following the maintenance activity

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19. the equipment operating and control procedures to be applied during the maintenance activity
20. how to use lifting and handling equipment correctly and safely in the maintenance activity
21. the problems associated with the maintenance activity, and how they can be overcome
22. the organisational procedure to be adopted for the safe disposal of waste of all types of material
23. the extent of your own authority and to whom you should report if you have problems that you cannot resolve

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Scope/range

1. Carry out all of the following activities during the maintenance activity:
 1. plan and communicate maintenance activities to cause minimal disruption to normal working
 2. obtain and use the correct issue of organisational and/or manufacturers' drawings and maintenance documentation
 3. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations and procedures to realise a safe system of work
 4. ensure the safe isolation of equipment (such as mechanical, electricity, gas)
 5. provide and maintain safe access and working arrangements for the maintenance area
 6. carry out the maintenance activities using appropriate techniques and procedures
 7. re-connect and return the system to service on completion of the maintenance activities
 8. functionally test and adjust equipment to specification
 9. record the results of the maintenance activity and report any defects found
 10. dispose of waste materials in accordance with safe working practices and approved procedures and leave the work area in a safe condition
2. Carry out maintenance activities on two of the following types of gas distribution systems:
 1. mains
 2. cylinders
 3. tanks
 4. other types of gas distribution systems
3. Carry out all of the following maintenance techniques, as appropriate to the equipment being maintained:
 1. testing the system for leaks
 2. marking/labelling of components
 3. dismantling equipment to unit/sub-assembly level
 4. tightening fasteners to the required torque
 5. setting, aligning and adjusting replaced components
 6. making 'off-line' checks before starting up
 7. checking components for serviceability

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8. replacing all 'lived' items (such as filters, batteries, lamps)
 9. dismantling units to component level
 10. replacing damaged/defective components
 11. functionally testing the completed system
4. Maintain and/or replace a range of gas distribution components, to include twelve of the following:
 1. motors
 2. couplings
 3. supporting devices
 4. valves
 5. manifolds
 6. electrical wiring
 7. rigid pipes
 8. storage devices
 9. switches
 10. flexible pipe/hoses
 11. sensors
 12. equipotential bonding
 13. gaskets and seals
 14. meters
 15. safety devices
 16. boosters
 17. gauges/indicators
 18. regulators
 19. filters
5. Maintain gas distribution systems in compliance with one of the following:
 1. organisational guidelines and codes of practice
 2. equipment manufacturer's operation range
 3. BS, ISO and/or BSEN standards
6. Complete and store all relevant maintenance documentation in accordance with organisational requirements, using one of the following:
 1. job cards
 2. permits to work/formal risk assessment and/or sign-on/off procedures
 3. maintenance log or report
 4. organisational-specific documentation
 5. electronic reports

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Developed by	Enginuity
Version Number	3
Date Approved	30 Mar 2021
Indicative Review Date	01 Mar 2024
Validity	Current
Status	Original
Originating Organisation	Enginuity
Original URN	SEM337
Relevant Occupations	Maintenance Engineer
Suite	Engineering Maintenance Suite 3
Keywords	Engineering; manufacturing; maintenance; gas distribution; mains gas system; cylinder gas system; tank gas system; gas booster system; gas storage device; pipework