SEMEMI2-27
Carrying out maintenance on compressed air equipment

Overview

This unit identifies the competences you need to carry out corrective maintenance activities on compressed air systems and equipment, in accordance with approved procedures. This will involve dismantling, removing and replacing faulty or damaged components, in line with company procedures, on a variety of compressed air equipment, such as compressed air generation, distribution and control systems. You will be expected to cover a range of maintenance activities, such as proof marking/labelling of components to aid the assembly, dismantling components requiring pressure techniques, torque loading, and setting, aligning and adjusting components, using appropriate techniques and procedures.

Your responsibilities will require you to comply with organisational policy and procedures for the maintenance activities undertaken, and to report any problems with these activities, or with the tools and equipment used, that you cannot personally resolve, or 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 to instructions, alone or in conjunction with others, taking personal responsibility for your own actions, and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will be sufficient to provide a sound basis for your work, and will enable you to adopt an informed approach to applying compressed air maintenance procedures. You will have an understanding of dismantling and reassembly methods and procedures, and their application. You will know how the system functions and the purpose of individual components, in adequate depth to provide a sound basis for carrying out any repair or adjustment. In addition, you will 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:

P1 work safely at all times, complying with health and safety and other relevant regulations and guidelines
P2 follow the relevant maintenance schedules to carry out the required work
P3 carry out the maintenance activities within the limits of your personal authority
P4 carry out the maintenance activities in the specified sequence and in an agreed timescale
P5 report any instances where the maintenance activities cannot be fully met or where there are identified defects outside the planned schedule
P6 complete relevant maintenance records accurately and pass them on to the appropriate person
P7 dispose of waste materials in accordance with safe working practices and approved procedures

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Knowledge and understanding

You need to know and understand:

K1 the health and safety requirements of the area in which the maintenance activity is to take place
K2 the isolation and lock-off procedure or permit-to-work procedure that applies to the compressed air equipment/system being worked on
K3 the specific health and safety precautions to be applied during the maintenance procedure, and their effects on others
K4 the hazards associated with carrying out maintenance activities on compressed air equipment (handling oils, greases, stored pressure/force, misuse of tools, using damaged or badly maintained tools and equipment, not following laid-down maintenance procedures), and how they can be minimised
K5 the importance of wearing protective clothing and other appropriate safety equipment during the maintenance process
K6 how to obtain and interpret information from job instructions and other documents needed for the maintenance activities (such as drawings, circuit and physical layouts, charts, specifications, manufacturers' manuals, history/maintenance reports, graphical electrical symbols, BS7671/IEE wiring regulations)
K7 the procedure for obtaining replacement parts, materials and other consumables necessary for the maintenance activities
K8 the sequence to be adopted for the dismantling/reassembly of various types of assemblies used on compressed air equipment
K9 the methods and techniques used to dismantle/assemble compressed air equipment (release of pressures/force/fluid, proof marking, extraction, pressing, alignment)
K10 methods of checking that components are fit for purpose, how to identify defects and wear characteristics, and the need to replace `lifed' items (such as seals and gaskets)
K11 how to make adjustments to components/assemblies to ensure that they function correctly
K12 the basic principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact
K13 how to check that tools and equipment are free from damage or defects, are in a safe and usable condition, and are configured correctly for their intended purpose
K14 the generation of maintenance documentation and/or reports following the maintenance activity
K15 the equipment operating and control procedures to be applied during the maintenance activity
K16 how to use lifting and handling equipment correctly and safely in the

	maintenance activity
K17	the problems associated with the maintenance activity, and how they can be overcome
K18	the organisational procedure to be adopted for the safe disposal of waste of all types of materials
K19	the extent of your own authority and to whom you should report if you have problems that you cannot resolve

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Additional Information

Scope/range related to performance criteria

You must be able to:

1. carry out **all** of the following during the maintenance activity:
   - 1.1. undertake the maintenance activities to cause minimal disruption to normal working
   - 1.2. use the correct issue of maintenance documentation (such as drawings, manuals, maintenance records)
   - 1.3. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
   - 1.4. ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
   - 1.5. ensure that safe access and working arrangements have been provided for the maintenance area
   - 1.6. re-connect and return the equipment to service on completion of the maintenance activities
   - 1.7. dispose of waste items in a safe and environmentally acceptable manner
   - 1.8. leave the work area in a safe and tidy condition

2. carry out maintenance activities on **two** of the following types of equipment:
   - 2.1. compressed air generation
   - 2.2. compressed air distribution
   - 2.3. compressed air control

3. carry out **all** of the following maintenance activities:
   - 3.1. testing the system for leaks
   - 3.2. dismantling equipment to the appropriate level
   - 3.3. setting, aligning and adjusting components
   - 3.4. checking components for serviceability
   - 3.5. replacing all ‘lifed’ items (such as filters)
   - 3.6. marking/labelling of components
   - 3.7. tightening fasteners to the required torque
   - 3.8. making ‘off-line’ checks before starting up
   - 3.9. functionally testing the completed system
   - 3.10. replacing damaged/defective components

4. maintain and/or replace **six** of the following compressed air equipment and components:
   - 4.1. pumps
   - 4.2. receivers
   - 4.3. driers

4.4. motors
4.5. pistons
4.6. valves
4.7. reservoirs
4.8. couplings
4.9. rigid pipe
4.10. vanes
4.11. filters
4.12. regulators
4.13. compressors
4.14. silencers
4.15. manifolds
4.16. sensors
4.17. lubricators
4.18. separation units
4.19. flexible pipe/hoses
4.20. gauges/indicators
4.21. gaskets and sealants
4.22. control equipment
4.23. electrical connectors
4.24. monitoring equipment
4.25. switches
4.26. electrical wiring
4.27. safety devices

5. maintain compressed air systems equipment, in accordance with **one** of the following:
   5.1. organisational guidelines and codes of practice
   5.2. equipment manufacturer's operation range
   5.3. BS7671/IEE wiring regulations
   5.4. BS, ISO and/or BSEN standards

6. complete **one** of the following maintenance records and pass it to the appropriate person:
   6.1. job cards
   6.2. permit to work/formal risk assessment
   6.3. maintenance log and action report
   6.4. company-specific documentation

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