

SEMEMI2-08 - SQA Unit Code H2AN 04

Carrying out scheduled maintenance activities on mechanical equipment



Overview

This unit identifies the competences you need to carry out scheduled maintenance activities on mechanical equipment, in accordance with approved procedures. You will be required to carry out scheduled maintenance on a range of mechanical equipment such as machine tools, gearboxes, portable tools, engines, pumps, process control valves, compressors, process plant, conveyers and elevators, lifting and handling devices, transfer equipment, mechanical structures, workholding devices and other company-specific equipment, in order to minimise downtime and ensure that equipment performs at the optimal level and functions to specification.

Your responsibilities will require you to comply with organisational policy and procedures for the maintenance tasks undertaken, and to report any problems with the maintenance process, tools or 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 scheduled maintenance procedures to mechanical equipment. You will have an understanding of the process of implementing scheduled maintenance tasks, the importance of carrying them out at specific times, and of recording the outcomes and actions taken. In addition, you will be expected to report where the outcomes identify the need for further investigation or maintenance work.

You will understand the safety precautions required when carrying out the maintenance tasks, especially those for isolating the equipment. You will also understand your responsibilities for safety, and the importance of 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 time scale
- 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 scheduled maintenance activities are to take place, and the responsibility these requirements place on you
- K2 the isolation procedure or permit-to-work procedure that applies to the equipment being maintained
- K3 the specific health and safety precautions to be applied during the scheduled maintenance activities, and their effects on others
- K4 the importance of wearing protective clothing and other appropriate safety equipment during the maintenance activities
- K5 the hazards associated with carrying out scheduled maintenance activities on mechanical equipment (such as handling oils/greases, stored pressure/force, misuse of tools), and how they can be minimised
- K6 how to obtain and interpret information from job instructions and other documentation used in the maintenance activities (such as drawings, specifications, manufacturers' manuals, servicing schedules, symbols and terminology)
- K7 the various checks to be carried out during the scheduled maintenance procedure
- K8 the procedure for obtaining the consumables to be used during the scheduled maintenance activity
- K9 methods of checking that components are fit for purpose, and the need to replace 'lived' items
- K10 how to check that any replacement components meet the required specification/operating conditions
- K11 how to make appropriate sensory checks (such as sight, sound, smell and touch)
- K12 the appropriate testing instructions to be adopted during the maintenance activity
- K13 how to make adjustments to components/assemblies to ensure they function to specification
- K14 the basic principles of how the equipment functions, its operating sequence, the working purpose of individual units/components and how they interact
- K15 how to complete scheduled maintenance records/logs/reports, in accordance with company policy and procedures
- K16 the equipment operating and control procedures, and how to apply them in order to carry out scheduled maintenance
- K17 the problems that can occur whilst carrying out the scheduled maintenance tasks, and how they can be avoided

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- K18 the organisational procedure(s) 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 scheduled maintenance activities:
 - 1.1. undertake the maintenance activities to cause minimal disruption to normal working
 - 1.2. use the correct issue of drawings and maintenance documentation
 - 1.3. adhere to procedures or systems in place for risk assessment, COSHH, personal protective equipment and other relevant safety regulations
 - 1.4. confirm with the authorised person that the equipment is ready for carrying out the scheduled maintenance
 - 1.5. ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
 - 1.6. ensure that safe access and working arrangements have been provided for the maintenance area
 - 1.7. carry out the scheduled maintenance tasks, using appropriate techniques and procedures
 - 1.8. dispose of waste items in a safe and environmentally acceptable manner,
 - 1.9. leave the work area in a safe and tidy condition

2. carry out scheduled maintenance activities on **two** of the following:
 - 2.1. gearboxes
 - 2.2. machine tools
 - 2.3. lifting and handling devices
 - 2.4. process plant
 - 2.5. portable tools
 - 2.6. engines
 - 2.7. pumps
 - 2.8. transfer equipment
 - 2.9. process control valves
 - 2.10. compressors
 - 2.11. workholding devices
 - 2.12. conveyers and elevators
 - 2.13. mechanical structures
 - 2.14. company-specific equipment

3. carry out **ten** of the following scheduled maintenance activities:
 - 3.1. removing excessive dirt and grime
 - 3.2. making sensory checks (such as sight, sound, smell, touch)
 - 3.3. checking equipment for leaks

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- 3.4. replacing 'lived' consumables (such as fluids, gaskets and seals, hoses)
- 3.5. monitoring the condition/deterioration of components (such as bearings, chains, belts, gears, cams, couplings)
- 3.6. checking that any safety equipment or controls are operating correctly
- 3.7. checking the operation of instrumentation (such as gauges, sensors and indicators)
- 3.8. carrying out and/or checking equipment self-analysis data
- 3.9. making adjustments to components and connections
- 3.10. checking/tightening fastenings to the required torque
- 3.11. replenishing oils, greases or other fluids
- 3.12. reviewing and checking equipment operation and performance
- 3.13. recording the results of the scheduled maintenance activity
- 3.14. reporting or taking action with regard to any defects that require immediate attention (such as replacing non-'lived' components)

4. maintain mechanical equipment in accordance with **one** of the following:
 - 4.1. organisational guidelines and codes of practice
 - 4.2. equipment manufacturer's operation range
 - 4.3. BS, ISO and/or BSEN standards

5. complete **one** of the following maintenance records, and pass it to the appropriate person:
 - 5.1. job cards
 - 5.2. specific company documentation
 - 5.3. permit to work/formal risk assessment

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