PROMT14
Carrying out preventative planned maintenance on electrical equipment

Overview

This standard identifies the competences you need to carry out preventative planned maintenance activities on electrical equipment, in accordance with approved procedures. You will be required to carry out planned maintenance activities on a range of electrical equipment, such as single, three-phase and direct current power supplies and their control systems, motors and starters, switchgear and distribution panels, control systems, electrical equipment, wiring enclosures and luminaries, in order to minimise down time and ensure that they perform at optimal level and function to specification.

Your responsibilities will require you to comply with organisational policy and procedures for the planned maintenance activities undertaken, and to report any problems with these activities, or with the tools and equipment that are used that you cannot personally resolve or that is 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 full 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 planned maintenance procedures to electrical equipment. You will understand the process of developing planned maintenance, and its application, and will know about the maintenance criteria in adequate depth to provide a sound basis for carrying out the activities safely and effectively, and for ensuring that the system is maintained to the required specification and remains compliant with all standards and regulations. In addition, you will be expected to report where the outcome identifies the need for further investigation or maintenance work.

You will understand the safety precautions required when carrying out the maintenance activities, 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
P6	defects outside the planned schedule
P7	Complete relevant maintenance records accurately and pass them on to the appropriate person
P8	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 planned maintenance activity is to take place, and the responsibility these requirements place on you
K2	The isolation and lock-off procedure or permit-to-work procedure that applies to maintenance activities (such as electrical isolation, locking off switch gear, removal of fuses, placing of maintenance warning notices, proving the isolation has been achieved and secured)
K3	The specific health and safety precautions to be applied during the planned maintenance activities, and their effects on others
K4	The importance of wearing protective clothing and other appropriate safety equipment during the maintenance activities
K5	How to recognise and deal with victims of electric shock (to include methods of safely removing the victim from the power source, isolating the power source, and methods of first aid resuscitation)
K6	Hazards associated with carrying out planned maintenance activities on electrical equipment (such as exposure to live conductors, misuse of tools), and how to minimise these and reduce any risks
K7	How to obtain and interpret drawings, circuit and physical layouts, charts, specifications, manufacturers' manuals, history/maintenance reports, graphical electrical symbols, BS7671/IEE wiring regulations, and other documents needed in the maintenance activities
K8	The maintenance schedules and methods to be followed in order to comply with company procedures for planned maintenance on electrical equipment
K9	The basic principle of operation of the equipment/circuits being maintained, and the function/purpose of individual components within the circuit
K10	The different types of cabling, and their application (such as multicore cables, single core cables, steel wire armoured (SWA), mineral insulated (MI), screened cables)
K11	The different types of electric motors and motor starters, and their maintenance requirements
K12	The different types of control system, their various components and maintenance requirements
K13	The application and use of a range of electrical components (such as plugs, switches, sockets, lighting and fittings, junction boxes, consumer units), and the types of checks required for each of them
K14	The various lighting systems used (including tungsten, sodium, mercury vapour and fluorescent), and their maintenance requirements
K15	The different types of wiring enclosure that are used (to include conduit, trunking and traywork systems), and what to check during the maintenance activities
K16	Methods of checking that components are fit for purpose, and the need

Knowledge and understanding

	to replace 'lifed' items (such as motor brushes, seals and gaskets, and overload protection devices)
K17	How to make sensory checks (by sight, sound, smell, touch)
K18	How to check that the replacement components meet the required specification/operating conditions (such as values, tolerance, current carrying capacity, voltage rating, power rating, working temperature range)
K19	The various planned maintenance categories that are generally used (such as condition based maintenance, scheduled maintenance and total preventative maintenance (TPM))
K20	The procedure for obtaining the consumables to be used during the planned maintenance activity
K21	The appropriate testing procedures to be adopted during the maintenance activity
K22	How to compile planned maintenance records/logs/reports that comply with company policy and procedures
K23	The equipment operating and control procedures, and how to apply them in order to carry out planned maintenance
K24	The problems that can occur whilst carrying out the planned maintenance activities, and how they can be avoided
K25	The organisational procedure to be adopted for the safe disposal of waste of all types of materials
K26	The extent of your own authority and to whom you should report if you have problems that you cannot resolve

Scope related to **1** **Carry out all of the following planned maintenance activities:**

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performance criteria

1.1 plan and communicate the maintenance activities to cause minimal disruption to normal working
1.2 obtain and use the correct issue of company and/or manufacturers' 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 and procedures to realise a safe system of work
1.4 ensure the safe isolation of equipment (such as mechanical, electricity, gas, air or fluids)
1.5 provide and maintain safe access and working arrangements for the maintenance area
1.6 carry out the planned maintenance activity using appropriate techniques and procedures
1.7 re-connect and return the equipment to service on completion of the maintenance activities
1.8 functionally test and adjust the equipment to meet the specification
1.9 dispose of waste items in a safe and environmentally acceptable manner, and leave the work area in a safe condition

2 Carry out planned maintenance on two of the following groups of electrical equipment:

2.1 power supplies
2.2 motors and starters
2.3 switchgear and distribution panels
2.4 other specific electrical equipment
2.5 control systems
2.6 electrical plant
2.7 luminaires

3 Follow planned maintenance activities, using one of the following types of maintenance categories:

3.1 condition based maintenance
3.2 preventative planned maintenance
3.3 scheduled maintenance
3.4 total preventative maintenance (TPM)

4 Carry out all of the following planned maintenance activities:

Scope related to performance criteria

4.1 visual examination of condition and security of wiring enclosures (conduit, trunking, traywork)
4.2 checking and replacing 'lifed' items (such as batteries, emergency lights, motor brushes)

4.3 checking the integrity of connections
4.4 inspecting and cleaning sensors
4.5 monitoring condition/deteriation of contactors
4.6 sensory checks (sight, sound, smell, touch)
4.7 making insulation resistance checks
4.8 carrying out portable appliance testing (PAT) or arranging for it to be completed
4.9 removing excessive dirt and dust from panels
4.10 checking the condition of cables
4.11 making routine adjustments
4.12 testing and rewiring system function
4.13 checking the integrity and security of earth bonding
4.14 recording the results of the maintenance and reporting any defects found

5 Ensure that the maintained equipment meets all of the following:

5.1 equipment remains compliant with appropriate regulations and safety requirements
5.2 all components and sub-assemblies are fit for purpose
5.3 all connections are electrically and mechanically safe and sound
5.4 equipment and associated cabling meets BS7671/IEE wiring regulations
5.5 equipment functions to specification
5.6 all potential defects are identified and reported for future action

6 Complete the relevant paperwork, from one of the following, and pass it to the appropriate people:

6.1 job cards
6.2 maintenance log or report
6.3 company-specific documentation
6.4 permit to work/formal risk assessment and/or sign-on/off procedures

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