

## Maintenance and repair of electrical hard facilities systems

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### Overview

This standard is about planning and completing a range of planned and reactive maintenance and modification/repair work across industrial; and commercial **electrical Hard Facilities systems** to ensure they continue to operate to their design specification. This includes routine statutory electrical inspection and testing work encompassing industrial and commercial alternating current systems and the correct recording thereof, direct current systems, low voltage systems and building and energy management systems.

The standard requires a high level of individual autonomy, highly developed diagnostic skills and detailed knowledge of system operating principles.

The standard is relevant to engineers and technicians who undertake maintenance, repair and modifications to Building Services Engineering Hard Facilities systems.

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## Performance criteria

## You must be able to:

1. Verify that the job information and documentation are current, relevant and complete
2. Verify that the plant, instruments, access equipment and tools are fit for purpose for the **work activity \*and \*mechanical systems/services**
3. Produce a risk assessment and method statement for the **work activity**, including the identification and use of personal protective equipment
4. Confirm with **relevant others** before commencing the **work activity**, that the work location and area can be accessed safely and has been checked for risk to site personnel and that required risk mitigation measures are in place
5. Select materials, **equipment, accessories and components** required to complete the *\*work activity* \*and confirm that they are of the required type and size, fit for purpose in accordance with the system's design and suitable for the job and working environment
6. Interpret diagrams and drawings to identify the location of the system, **equipment, accessories and components**
7. Complete safe to touch, safe identification and safe-isolation to confirm the safe disconnection, installation and/or connection of electrical equipment including lock off, cables/wiring, associated with the system
8. Undertake the **work activity** on the system, equipment, accessories and components in accordance with the system's design, the working environment, manufacturers' instructions, organisational requirements and the limits of your technical responsibility
9. Identify where the **work activity** requires additional discipline-specific expertise in accordance with your level of authority, competence and organisational procedures
10. Replace and/or repair the system, **equipment, accessories and components**
11. Perform the required testing to confirm the integrity of the system, equipment, accessories and components on completion of the **work activity**.
12. Adjust the control features for optimum performance
13. Confirm with *\*relevant others* \*that all works and variations minimise the potential for hazard and risk
14. Obtain customer/client acceptance of the completed **work activity \*on the system, \*equipment, accessories and components \*in accordance with \*organisational procedures**
15. Implement **organisational procedures** for the safe transport and/or

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- disposal of waste material, substances and liquids in accordance with suppliers' and manufacturers' instructions and relevant legislation
- 16. Complete relevant documentation in accordance with **organisational procedures**

## Knowledge and understanding

You need to know and understand:

1. The limitations of your responsibility and competence when undertaking work on mechanical Hard Facilities **systems/services**
2. The operations, applications, advantages and limitations of different systems and their associated **equipment, accessories and components**
3. How to verify that job information and documentation is current, relevant and complete and that the plant, instruments, access equipment and tools are fit for purpose
4. How to produce a risk assessment and method statement for the *\*work activity* \*including the identification and use of personal protective equipment, in accordance with the system's design, the conditions of the working environment, *\*organisational procedures* \*and the activities of other personnel on site
5. How to interpret diagrams and drawings to identify the location of the system and its associated **equipment, accessories and components** *\*relevant to the \*work activity*
6. How to select materials, **equipment, accessories and components** *\*required to complete the \*work activity* and confirm that they are of the correct type and size, fit for purpose in accordance with the system's design, suitable for the working environment
7. The **organisational procedures** for safe to touch, safe identification and safe-isolation of electrical supplies
8. The methods and techniques associated with the **work activity** and relevant to the system's design, the working environment, the manufacturers' instructions and the limits of your technical responsibility
9. How to identify where the **work activity** requires additional discipline-specific expertise in accordance with your job description and formal contract
10. How to implement *\*organisational procedures* \*for the safe transport and/or disposal of any waste material, substances and liquids in accordance with suppliers' and manufacturers' instructions and relevant legislation
11. The methods, techniques and procedures used to undertake the required testing to confirm the integrity of the system and its associated **equipment, accessories and components** on completion of the **work activity**
12. The organisational procedures for confirming with *\*relevant*

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- others* \*that all works and variations minimise the potential for hazard and risk
13. The\* *organisational procedures*\* for obtaining customer/client acceptance of the serviced and/or maintained system and its associated equipment, accessories and components the organisational procedures for completing all relevant documentation
  14. How to communicate with **relevant others**
  15. How to complete relevant documentation in accordance with **organisational procedures**

## Scope/range

### Work Activity

- service
- maintenance
- fault diagnosis and rectification
- commissioning
- system modification

### **\*\*Electrical Systems/Services**

- control
- fire and security
- communication
- heating
- lighting
- power

### **\*\*Equipment, accessories and components**

- isolators
- circuit breakers
- fuses
- switches
- socket-outlets/fused-spurs
- earthing protection
- motor control equipment
- control panels – environmental control
- control devices
  - electrical
  - electronic
  - electro-mechanical
- smart controls
- electrical cables/wiring
  - thermosetting insulated cables including flexes
  - single and multicore thermoplastic and thermosetting insulated cables
  - fibre-optic cables

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- single wire armoured cables
- armoured/braided flexible cables and cords
- fire resistant and mineral insulated cables

### **Organisational Procedures**

- information management
- project management
- risk assessment management
- health and safety management
- management of natural and built environment
- customer service
- accident reporting
- emergencies
- communication with relevant others

**\*\*Relevant others\*\*** \* customers/clients \* client representatives \* supervisors \* site/contract manager \* other contractors/trades \* members of the public \* work colleagues \* others

## Maintenance and repair of electrical hard facilities systems

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