
Overview

This standard is for people who identify and rectify faults in electrical systems (ac/dc) and equipment

The person carrying out this work must be able to carry out the processes and procedures for the identification and rectification of faults in accordance with the current versions of the appropriate industry standards and regulations, the specification, industry recognised working practices, the working environment and the natural environment.

They must understand and apply the correct methods and procedures when identifying and rectifying faults in electrical systems and equipment, including:

- the identification and use of the correct instruments
- how to identify and locate faults
- how to rectify the faults that are identified, located and diagnosed
- the completion of the relevant documentation
- the recording of relevant data and information.

Performance criteria

- You must be able to:*
1. obtain clear and detailed information about the reported fault(s) and any components which need to be replaced from relevant:
 - sources of information
 - documentation
 2. advise the relevant people clearly and accurately about the potential disruption and consequences of carrying out the processes and procedures for the identification and rectification of faults
 3. confirm a programme of work with the relevant people in accordance with organisational procedures
 4. determine and obtain the resources required, as relevant, to undertake:
 - the identification and location of the fault(s)
 - the rectification of the fault(s)
 5. select the instruments to be used
 6. confirm that the instruments are fit for purpose and have a current calibration certificate
 7. identify the correct means of electrical isolation prior to commencing the fault identification and rectification process
 8. complete safe-isolation as and when required to ensure the safe fault identification and rectification in electrical cables, conductors and/or wiring system and the associated equipment, accessories and components
 9. comply with industry practices and organisational procedures to ensure the co-ordination of site services and the activities of other trades affected by:
 - the identification and location of the fault(s)
 - the rectification of the fault(s)
 10. identify, locate, diagnose and rectify faults
 11. repair, remove and replace in accordance with industry recognised methods and procedures, as appropriate:
 - electrical cables, conductors and/or wiring system
 - equipment, accessories and components

12. ensure, if the fault(s) cannot be corrected immediately, the safety of the relevant:

- electrical cables, conductors and/or wiring system
- equipment, accessories and components

13. inspect and test, as appropriate and in accordance with industry recognised methods and practices the repaired and/or replaced:

- electrical cables, conductors and/or wiring system
- equipment, accessories and components

14. provide clear and accurate information to relevant people about the electrical system and equipment in terms of:

- hand over to the customer/client
- any variations to the original system and/or its equipment
- customer/client acceptance of the completed work in
- accordance with organisational procedures

15. relevant documentation being completed and recorded in the appropriate information systems in accordance with organisational procedures

Knowledge and understanding

You need to know and understand:

1. the operation, applications, advantages and limitations of different electrical systems
2. how to obtain clear and detailed information about the reported fault(s) and any components which need to be replaced from:
 - relevant sources of information
 - relevant documentation
3. the organisational procedures and industry practices when carrying out the processes for the identification and rectification of faults for:
 - advising the relevant people about the potential disruption and consequences
 - confirming a programme of work with the relevant people
 - ensuring the coordination of site services and the activities of other trades affected
4. how to determine and obtain the resources required, as relevant, to undertake:
 - the identification and location of the fault(s)
 - the rectification of the fault(s)
5. how to select the instruments to be used
6. how to confirm that the instruments are fit for purpose and have a current calibration certificate
7. the correct procedures for safe isolation
8. the techniques to identify, locate, diagnose and rectify faults
9. how to repair, remove and replace in accordance with industry practices:
 - electrical cables, conductors and/or wiring system
 - equipment, accessories and components
10. how to ensure, if the fault(s) cannot be corrected immediately, the safety of the relevant:
 - electrical cables, conductors and/or wiring system
 - equipment, accessories and components

11. the methods and processes to inspect and test, as appropriate and in accordance with industry practices, the repaired and/or replaced:

- electrical cables, conductors and/or wiring system
- equipment, accessories and components

12. how to provide clear and accurate information to relevant people about the electrical system and equipment in terms of:

- hand over to the customer/client
- any variations to the original system and/or its equipment
- customer/client acceptance of the completed work in accordance with organisational procedures
- relevant documentation being completed and recorded in the appropriate information systems in accordance with organisational procedures

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Scope/range

Scope/range related to performance criteria **Working environments (internal and/or external)**

- domestic
- non-domestic
 - commercial
 - industrial
 - agricultural
 - horticultural
 - leisure and entertainment
 - residential medical and care facilities
 - public highways and parks
 - public services establishments
 - pre-1919 traditional/historic buildings

Electrical system

An electrical system (ac/dc), internal and/or external, in a building/structure that has an extra low voltage and/or low voltage single and/or multi-phase supply, circuits, equipment and components to provide:

- control
- communication
- heating
- lighting
- power

Organisation procedures

- information management
- project management
- risk assessment
- risk management
- implementing and monitoring health and safety requirements and issues
- implementing and monitoring issues relating to the natural environment
- customer services
- accident reporting
- emergencies
- communication with relevant people

Resources

- labour
- plant and equipment
- instruments
- finance
- IT
- materials and other consumables

Site services

- electricity
- water
- gas
- oil
- drainage
- telecommunications
- data transmission either underground or overhead

Relevant people

- customers/clients
- client representatives
- site/contract manager
- other contractors/trades
- members of the public
- work colleagues

Documentation

- electrical installation certificates
- electrical installation condition reports
- minor electrical installation works certificates
- schedules of inspections
- schedules of test results
- operational instructions
- manufacturers' instructions
- handover agreements

Electrical cable, conductors and wiring systems

- thermosetting insulated cables including flexes
- single and multicore thermoplastic and thermosetting insulated

cables

- flat profile cable
- mineral insulated cables
- earthed metallic cable
- single wire armoured cables
- armoured/braided flexible cables and cords
- data cables
- pre-fabricated conductor, cable and wiring systems
- fibre optic cable
- fire resistant cable
- bus-bar trunking

Equipment, accessories and components

- consumer units
- distribution boards and/or panels
- isolators
- circuit breakers
- fuses
- switches
- socket-outlets
- earthing protection
- luminaires
- motor control equipment
- control panels – alarms; emergency lighting; environmental control
- control devices – electrical; electronic; electro-mechanical
- solar photovoltaic panels – control equipment, components and accessories
- micro-wind turbine control equipment
- cable glands

Enclosures for cables, conductors and wiring systems

- PVC and steel conduit
- PVC and steel trunking
- cable tray
- basket and ladder systems
- ducting systems
- bus-bar trunking
- pre-fabricated conductor, cable and wiring systems

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Glossary

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Relevant Occupations Electrical Trades

Suite Electrotechnical

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