ECIICESE03

Inspect, test and commission electrical installations

Overview

This standard is about the inspecting, testing and commissioning of electrical installations

You will need to be able to perform the appropriate inspections and tests to ensure that the installation is in accordance with regulations prior to it being commissioned. You will need to prepare a test record using the correct tools and techniques whilst adhering to health, safety and environmental legislation, regulations and safe working practices.

In the context of this standard, your responsibility is to interpret and work within given specifications, selecting techniques and making variations to achieve the best possible result. In some cases, you may still be expected to refer to others for final authorisation, even though you remain responsible for identifying and implementing decisions.

Who this standard is for:

Electrical installers and others that install electrical systems and equipment

Performance criteria

You must be able to:

1. work safely at all times, complying with health, safety, environmental and other relevant legislation, regulations, guidelines and local rules or procedures
2. ensure that the **work environment**, material, tools and equipment are suitably prepared for the work activities to be undertaken
3. obtain and interpret the required information and specifications using drawings and other relevant sources
4. plan and agree the schedule for inspecting and testing procedures to minimise plant disruption
5. identify the correct means of **electrical isolation** or **mechanical isolation** of any service/supply/plant/equipment in the work area that poses a hazard to safety and carry out isolation and lock-off
6. prove-dead any isolated supplies
7. conduct an initial verification of the installation and complete a schedule of inspections as described within regulations
8. record results on the correct forms
9. prepare to undertake testing activities:
10. conduct testing in accordance with as described within regulations

* Dead tests

* Live tests

1. record test results on the correct form and check against specifications
2. prepare for commissioning
3. commission the installation and check correct operation
4. ensure all commissioning data has been captured and checked against specifications
5. check that the inspection, testing and commissioning is complete and to the required specification
6. follow the required handover procedures
7. ensure the **work area is reinstated**
8. deal promptly and effectively with problems within your control and report those that have been and cannot be solved

Knowledge and understanding

You need to know and understand:

1. relevant legislative, regulatory and local requirements or procedures and safe working practices including your responsibilities with regards to reporting lines and procedures
2. preparation and reinstatement requirements in respect of the work area, material, and equipment, and the possible consequences of incorrect actions in these areas
3. relevant engineering drawings, related specifications, quality standards and manufacturers information
4. the difference between inspecting, testing and commissioning
5. safe isolation, lock-off and prove-dead procedures for reasons of safe working
6. techniques for initial verification in accordance with BS7671
7. techniques for testing an electrical installation to include:
8. techniques for safely commissioning an electrical installation
9. how to review the data obtained, what types of anomalies may be found and what action to take
10. the documentation used to report inspection, test and commissioning results, their analysis and the importance of correctly recording the results
11. what action(s) should be taken in relation to:

* the outcome of the analysis

* relevant procedures and reporting lines

1. your responsibilities for ensuring care and security of tools and equipment used
2. your responsibilities with regard to reporting lines and procedures in your working environment

Glossary

A **Work environment** could include:

- engineering construction sites
- controlled operations
- offshore installations
- maintenance sites
- nuclear sites
- repair sites

A **Work environment** may be in open or restricted spaces:

- at height
- confined spaces
- control rooms
- controlled operational and offshore installations
- designated work areas
- potentially explosive atmospheres
- existing plants and structures
- fabrication workshops
- in plant rooms
- inside structures, systems and plant
- on access structures
- on open structures
- onshore and offshore installations
- shafts
- shipyards
- tunnels

Work area is reinstated could include:

- returning the work area to a safe condition
- removing barriers
- sweeping up
- correctly and ethically disposing of waste materials
- storing re-usable materials, consumables and equipment in accordance with appropriate procedures
- completing all necessary documentation

Electrical isolation could include:

- getting appropriate authorisation including Permit to Work
- identifying the correct isolations and disconnections required
- correct sequence of isolations and disconnections
- proving-dead of the electrical supply and implications of GS38
- safety methods for maintaining isolations and disconnections

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Mechanical isolation could include:

- getting appropriate authorisation including Permit to Work
- identifying the correct isolations and disconnections required
- correct sequence of isolations and disconnections
- closing a valve or fitting blanks for a service or supply
- checking the mechanical item cannot be moved or move itself
- safety methods for maintaining isolations and disconnections

Cabling systems:

A cabling system is a complete system of cabling and associated hardware, which provides a comprehensive system infrastructure which serves a wide range of uses, such as process control and data or power transmission

Cable containment:

Cable containment systems are used to organise and store cables within a system installation and can include conduit, trunking, ladder, tray and basket systems

Cable segregation:

Power supply and instrument/control cables should be run to prevent electro-magnetic interference

Enclosures:

An electrical enclosure is a cabinet for electrical or electronic equipment and provides protection to equipment users and also protects the contents from the environment

Engineering drawings and related specifications:

An engineering drawing is a type of technical drawing that is used to convey information about an item for construction, maintenance or fault-finding purposes

Reporting forms:

A reporting form should be based upon those recommended in the current edition of BS7671 and incorporate a schedule of inspections and a schedule of results

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