

PERFORM TESTING OF ELECTRICAL INSTALLATION

UNIT CODE: ENG/OS/EI/CR/02/4/A

UNIT DESCRIPTION

This unit covers the competencies required to carry out inspection and testing of an electrical installation. The inspection and testing work covers; identification of types of test, preparation of test equipment, verifying installed fittings, conducting performance tests, recording testing results, generation of reports and issuance of certificates.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
<p>These describe the key outcomes which make up workplace function.</p>	<p>These are assessable statements which specify the required level of performance for each of the elements</p> <p><i>(Bold and italicised terms are elaborated in the Range)</i></p>
<p>1. Carry out physical inspection</p>	<p>1.1 Visual inspection is carried out</p> <p>1.2 Fitting points and equipment are identified as per as-built drawings</p> <p>1.3 Physical condition of the installation is checked as per established standards</p> <p>1.4 Firmness of the installation is checked as per the established standards</p>
<p>2. Identify the test to be carried out and the test equipment</p>	<p>2.1 The installation to be tested is identified per established standards</p> <p>2.2 Test points are identified as per established standards</p> <p>2.3 Test parameters and their expected values are identified as per established standards</p> <p>2.4 Appropriate Test equipment are identified as per the tests to carried out</p> <p>2.5 Test equipment are checked for appropriate specifications and functionality</p> <p>2.6 Test equipment are prepared and stored for safe and easy access in accordance with established procedure</p>
<p>3. Perform the test</p>	<p>3.1 Test sequence procedure is decided based on the test standards</p> <p>3.2 Safety precautions are adhered to as per OSHA</p> <p>3.3 Additional precaution is observed on the installation in hazardous environment as per EHS standard</p> <p>3.4 Tests are carried out in line with the IEE regulations</p>

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	3.5 Test results are recorded and compared with standards values 3.6 Test report is compiled and shared with relevant parties
4. Issue certificates	4.1 Test certificate is issued to the relevant parties 4.2 Wiring certificate is issued to the relevant parties

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance

Variable	Range <i>May include but is not limited to:</i>
1. Installation	1.1 Domestic 1.2 Industrial 1.3 Commercial 1.4 Agriculture/ horticulture 1.5 Water heater
2. Test equipment	2.1 Multimeter/AVO meter 2.2 Wattmeter 2.3 Insulation resistance tester 2.4 Loop impedance tester 2.5 Earth resistance tester 2.6 Clamp meter 2.7 Power quality analyser 2.8 Infrared camera 2.9 Phase sequence meter 2.10 Frequency meter 2.11 Synchroscope 2.12 Tachometer 2.13 Tacho generator 2.14 Laser meter 2.15 Lux meter

Variable	Range <i>May include but is not limited to:</i>
3. Visual inspection	Check for: 3.1 Firmness of accessories/equipment 3.2 Loose connections 3.3 Damaged equipment/component if any 3.4 Colour coding
4. Fitting points	4.1 Switches 4.2 Cables 4.3 Socket outlets 4.4 Light fittings 4.5 Conduits and cable trays 4.6 Trunking 4.7 Motors 4.8 Power generators 4.9 Pumps
5. Test parameters	5.1 Potential difference between circuits 5.2 Power 5.3 Resistance 5.4 Voltage 5.5 Current 5.6 Inductance/capacitance 5.7 Frequency
6. Tests	6.1 Continuity 6.2 Insulation resistance 6.3 Polarity 6.4 Earth electrode resistance 6.5 Earth fault loop impedance 6.6 Phase sequence 6.7 Speed

REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of:

1. Organisational and legislative requirements including:	
1.1	The manufacturer's warranty requirements relating to inspection and testing

1. Organisational and legislative requirements including:	
	activities for the electrical installations and related components.
1.2	The legal and statutory requirements relating to the electrical installation and components.
1.3	Legislation and workplace procedures relevant to: 1.3.1 Health and safety; 1.3.2 The environment (including waste disposal); 1.3.3 Appropriate personal protection equipment (PPE).
1.4	Workplace procedures for: 1.4.1 Using test tools and instruments 1.4.2 Work place communication; 1.4.3 Time management 1.4.4 Tools and equipment management
1.5	The importance of documentation and keeping records
1.7	The relationship between time and costs.
2. The use of technical information including:	
2.2	The importance of using the correct sources of technical information.
3.	Performing tests including:
3.1	3.1.1 Connection of testing equipment 3.1.2 Operation of testing equipment 3.1.3 Recording and interpretation of test results 3.1.4 Making recommendations based on test results 3.1.5 Compiling test report

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:	
<ul style="list-style-type: none"> • Communications (verbal and written); • Proficient in using test equipment; • Time management; • Analytical; • Faults troubleshooting; • Problem solving; • Planning; 	<ul style="list-style-type: none"> • Decision making; • First aid; • Report writing;

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and understanding and range.

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Applied and adhered to safety procedures 1.2 Applied the procedures of testing according to the standard 1.3 Identified the types of tests to be carried out 1.4 IEE regulations were observed during testing 1.5 Test equipment were identified according to the type of tests that were to be carried out 1.6 Obtained and recorded test values accurately 1.7 Interpreted the recorded test results
<p>2. Resource Implications</p>	<p>Resources the same as that of workplace are advised to be applied including</p> <ul style="list-style-type: none"> 2.1 Electrical installation tool kit 2.2 Multimeter/AVO meter 2.3 Wattmeter 2.4 Insulation resistance tester 2.5 Clamp meter 2.6 Phase sequence meter 2.7 Frequency meter 2.8 Tacho meter
<p>3. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation 3.2 Oral questioning 3.3 Practical test in conducting test 3.4 Demonstration of interpretation of test results
<p>4. Context of Assessment</p>	<p>Competency may be assessed individually</p> <ul style="list-style-type: none"> 4.1 In the actual workplace 4.2 Simulated environment of the work place
<p>5. Guidance information for assessment</p>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>