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KENYA
ACCREDITATION
SERVICE

ACC-CD-17-01

Criteria for Accreditation of Inspection of Low Voltage Installations and Associated Electrical Equipment

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1 Background Information

1.1 Purpose

The selection of an inspection body accredited against the requirements of ISO/IEC 17020 and this publication is intended to give the owner or user of an electrical installation the assurance of the level of competence concerning the provision of an inspection service.

1.2 Scope

This guidance document covers the inspection of low voltage electrical installations and associated electrical equipment as defined in KS 662 and as a requirement of the implementation of the Energy Act.

1.3 Role(s) and Responsibility

Role	Responsibility
All KENAS Technical Staff	Process owner
MEDO	Reviewer
CMLA	Recommender
CEO	Approval
Accreditation Committee	Compliance

2 Terms and Definitions

For the purpose of this manual, the following terms and definitions shall apply in addition to those given in ISO/IEC 17000 and the Kenya Accreditation Service Act 2019.

2.1 Acronyms and Abbreviations

CEO	Chief Executive Officer
MEDO	Medical Officer
CMLA	Chief Manager, Laboratories
KENAS	Kenya Accreditation Service

2.2 Definition of Terms

2.2.1 Accreditation

A third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks.

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2.2.2 Inspection Body

Shall be taken to mean an accredited inspection body.

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3 Criteria

3.1 Process Instructions

3.1.1 The inspection covered is of the installation identified in the contract for the inspection from its origin as defined in **KS 662**. Inspection of any on-site interconnecting high voltage electrical system and protection of the high voltage electrical system is not covered by this document.

3.1.2 Additional requirements relating to the inspection of electrical equipment and installations in potentially explosive atmospheres are covered by a different procedure.

3.1.3 The inspection may be for the initial verification of a new or modified installation or the inspection of an installation already in-service including periodic inspections.

3.2 Independence, impartiality and integrity

3.2.1 Inspection bodies operating as Type A, B or C bodies as defined in **ISO/IEC 17020** may be accredited for inspecting electrical systems provided that they meet the requirements of **ISO/IEC 17020** and this publication.

3.2.2 To ensure the independence of inspection work, the reporting chain for inspection shall be separate from that of any other work undertaken.

3.2.3 A Type C inspection body which undertakes installation, maintenance or remedial work in conjunction with inspections shall have clearly documented procedures for each activity and shall establish adequate safeguards to ensure the integrity and impartiality of the inspections. Such safeguards may include the use of separate bodies of staff to carry out the inspection and maintenance work coupled to independent assessment of the inspection work.

3.3 Organization, management and supervision

3.3.1 In addition to the requirements for accreditation the following shall apply:

3.3.2 For the inspection of electrical installations covered by this publication the requirements for supervision shown in Table 1 shall apply.

3.3.3 The Technical Manager in charge of, and having overall responsibility for, an inspection body seeking accreditation is to be of Category 1 or 2 status as specified in Table 1 and be directly employed by the inspection body.

3.3.4 For effective supervision, the Technical Manager may delegate supervisory responsibilities to locally appointed managers.

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3.3.5 Where sub-contracted service providers are required they shall be able to demonstrate their technical competence and ability to undertake the required tasks to the satisfaction of the technical manager. (Cross-refer to clause 14 of **ISO/IEC 17020**).

3.4 Internal audit

ACC-CD-17 applies without change.

3.5 Personnel qualifications and competence

3.5.1 The requirements for qualifications, experience and training relevant to the inspections covered by this document are shown in Table 1.

3.6 Training

3.6.1 In addition to the requirements for accreditation, the inspection body shall ensure that each member of the inspection staff receives such induction training and continuation training as is both appropriate and sufficient for the purposes of the inspection work carried out.

3.6.2 Each member of the inspection staff shall be able to demonstrate a competent working knowledge, for the types of installation to be inspected, of:

a) The relevant type(s) of electrical installation(s) including construction, inspection, testing, operation, maintenance, significance of defects and typical problem areas;
b) Where relevant, any associated areas of technology.

3.6.3 See **Annex 1** for the Experience category and supervision of inspection staff

3.7 Equipment

Inspection and test equipment used during an inspection shall be fit for purpose, have a current calibration certificate and be suitable for the locations in which it is intended to be used.

3.8 Inspection methods and procedures

3.8.1 The inspection body shall make it clear to those seeking the inspection body's services where it may be necessary to close down or otherwise de-energise and isolate equipment in order to complete the inspection. The implications of such isolation shall be jointly considered by the inspection body and owner/operator/user of the electrical installation.

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3.8.2 The inspection body shall co-operate with the equipment/installation owner/operator/user to ensure that inspections cause the minimum of disruption.

3.8.3 Inspection staff shall comply with any regulatory or local requirements relating to such matters as site induction procedures, relevant safety procedures eg. Permit to Work, Sanctions to/for test and other safety access control measures appropriate to the field of activity.

3.8.4 Inspection methods and procedures shall as a minimum be in accordance with KS 662. However, for installations designed and installed to other equivalent National or International Standards and additional requirements of industry standards the inspections shall be undertaken in accordance with the requirements of those standards.

3.8.5 When reporting, it should be made clear that departures noted, may have satisfied an earlier edition of an appropriate standard, current at the time the installation was completed.

3.9 Records

Where integral recording facilities in inspection or test equipment are used the data shall be transferred to a secure storage facility taking due account of the effect of loss of data.

3.10 Reporting

The following shall apply:

a) Where inspections cannot be completed due to unavailability or non- access to any part of the installation, plant or equipment being inspected this limitation shall be stated in the report;
b) Where maintenance, remedial or installation work is undertaken concurrently with inspection work, the associated inspection report shall clearly define the work associated with inspection and testing in a manner of sufficient accuracy for meaningful audit trails;
c) Guidance on the elements of inspection reports and certificates is given in **ILAC P15** Application of **ISO/IEC 17020** for the accreditation of inspection bodies.

3.11 Sub-contracting

This guidance document shall apply without change. See Annex 2 Qualification and competency categories and Annex 3 Levels of Supervision.

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4 Associated Documents

Ref	Document Identifier	Document Title
1.	ISO/IEC 17020	Conformity assessment - Requirements for the operation of various types of bodies performing inspection
2.	IEC 60364 -6	Low Voltage Installations - Verification
3.	ILAC P15	Application of ISO/IEC 17020:2012 for the Accreditation of Inspection Bodies
4.	Legal Notice No.115, Kenya Gazette Supplement No. 60 (Legislative Supplement No. 34),	The Energy Regulatory Commission (ERC) - The Electric Power (Electrical Installation Work) Rules, 2006
5.	Legal Notice No. 44, Kenya Gazette Supplement No.49 (Legislative Supplement No. 15)	The Energy (Electricity Licensing) Regulations, 2012
6.	KS 662	Requirements for electrical installations

5 Revision/ Amendment Records

Date	Ver	Revised By	Reason for Revision
10/10/2022	01	RSQ	Newly developed/formatted document

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Annex 1: Experience category and supervision

Type of installation	Technical Manager and Deputy	Locally appointed Technical Supervisor(according to operational needs)	Inspection personnel	Trainee
Group I Multi-phase-incoming supply(ies) above 500 A rating and/or Public buildings & stadiums, etc, with a capacity above 250 persons	Category 1 5 years' appropriate experience	Category 2 5 years' appropriate Experience Supervision Level B	Category 3 4 years' appropriate Experience Supervision Level B	Category 3 Supervision Level D
Group II Single- or multi-phase incoming supply(ies) up to 500 A rating	Category 2 5 years' appropriate experience	Category 2 4 years' appropriate experience supervision Level B	Category 3 3 years' appropriate experience supervision Level B	Category 3 Supervision Level D
Categories, levels of supervision and constraints placed on activities are explained in Appendices 1, 2 and 3 Category 1 personnel undertaking inspection activities shall be subject to Supervision Level A. An inspection body may be accredited to undertake inspections in both Groups				

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Annex 2: Qualification and competency categories

Category 1

There will be a person having a wide general and technical knowledge gained through experience of the type of LV system and the risks involved, normally a registered electrical engineer.

They shall have:

a) Technical knowledge and experience in this subject and be able to make proper judgements on the range of technical problems likely to arise in all topics under consideration;
b) An understanding and working experience of relevant Standards, International and National certification procedures and National Regulations based thereon, and of other relevant National laws, regulations and guidance;
c) The ability to define inspection duties required;
d) The ability either to draw up written plans for inspection, or to report on the technical accuracy of plans prepared by others. This knowledge shall include that pertaining to the follow up effects of any failure within their jurisdiction;
e) The knowledge to correctly interpret the results of the submitted reports and properly relate them to the tasks and duties as defined.

Category 2

In addition to the requirements of Category 3 they shall have a demonstrable:

a) Understanding of electrical standards including equipment classification, design standards and codes of practice for the selection and use of equipment together with the applicable inspection criteria;
b) Understanding of the safety rules and associated codes of practice that are applicable to LV, FELV, PELV and SELV systems;
c) Understanding of the inspection and maintenance requirements of LV systems as specified in codes of practice and other relevant documents;
d) Knowledge of electrical inspection and associated test procedures which may be employed including the significance of sampling techniques;
e) Knowledge of methods used to maintain electrical integrity;
f) Knowledge of any special electrical inspection and testing techniques which may be required;
g) An understanding of drawings, and manufacturers literature, relevant to the equipment to be inspected.

Category 3

Persons with a proven minimum level of competence in Electrical Engineering will be suitable for selection at entry level. This may be gained by completing a time served

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apprenticeship / attending appropriate training course(s) and subsequently receiving a Certificate of Competence following assessment.

They will work under constant supervision until they have sufficient experience, as determined by their superiors, to allow them to work under frequent or infrequent supervision as allowed in Table 1 prior to achieving the competence levels required for Category 2.

It is anticipated that a minimum of 1 year working under frequent supervision will be required before upgrading can be considered.

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Annex 3: Levels of Supervision

Regular documented meetings of inspection personnel with their management shall be conducted to resolve specific issues and to review work undertaken.

In the Levels described below, Supervisor means a technical superior, however named. Direct contact means on the job contact at the site of operation.

Level A: Occasional

Formal, direct contact to review work with Supervisor at least annually. More frequent direct contact with Supervisor may be necessary. Authoritative technical support from personnel of Category 1 or 2 to be readily available.

Level B: Infrequent

Direct contact with Supervisor at least every 3 months. Access to supervision and technically authoritative support to be available as needed.

Level C: Frequent

Direct contact with Supervisor at least weekly. Authoritative technical support from category 1 or 2 personnel.

Level D: Constant

Direct daily contact with Supervisor at site of operation. Authoritative technical support from category 1 or 2 personnel to be readily available.

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Annex 3: Constraints placed on activities

Inspection personnel shall restrict their tasks to those within the bounds of their authorisation and responsibilities.

Inspection activities or tests, shall be in accordance with relevant Standards, Codes of Practice, Performance Specifications, and related National Statutory legislation.

Restrictions also include;

a) Not to become involved with technology outside their field of declared competence other than when in consultation with, and acting with the approval of, competent persons.
b) Not to carry out any repairs to equipment or to initiate changes to operating parameters unless it is in accordance with their assigned duties.
c) Not to authorise or undertake any remedial action beyond their authorisation. Where such action, which they believe to be required, is outside their authorisation, to consult with persons at a higher level who shall authorise any agreed requirements in writing.

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