



Kenya Power

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STIMA PLAZA, KOLOBOT ROAD

Our Ref: **KP1/6A.1/PT/11/A56**

22nd December, 2016

Your Ref:

M/s

Dear Sir/ Madam:

CLARIFICATION No 1: ON ICB No: KP1/6A.1/PT/11/A56 FOR PROCUREMENT FOR DESIGN, SUPPLY AND INSTALLATION OF A LABORATORY (INCLUDING TESTING EQUIPMENT AND CIVIL WORKS) FOR TESTING OF LIVE LINE EQUIPMENT.

1. CLARIFICATION TO BID DOCUMENT

The following responses are made to clarifications sought on various issues in the Bidding Documents for Procurement of Live line equipment.

No.	Query	Response
1.	On the specification for VLF AC/DC Hipot, clause 4.1.3 requires a combined AC & DC output. Please note that VLF AC equipment cannot give a DC output. It is not possible to have VLF AC & DC combined equipment. We therefore request if this equipment can be supplied as two (2) different sets whereby DC Hipot will be for testing dielectric and insulation testing of switchgears, transformer, and insulators & rotating machines up to 200 kV & VLF AC for testing underground cable up to 200 kV. On the same note kindly provide detailed specification for DC Hipot and a GTP for the same.	The specifications call for supply of 4 test equipment, AC/DC Hipot in item nine (9) of the price schedules. The clarification is as follows: 1) Supply two number portable AC VLF test equipment. 2) Supply two number portable DC test equipment. The specifications for DC Hipot is attached.
2.	On clause 5.3 require the test equipment to be inspected and tested as per the specification before installation and upon commissioning at the proposed testing facility. The supplier to replace any equipment which fail to meet any of the requirements during the inspection/test. But the manufacturer suggest that any failure to meet the requirement found during inspection/test shall be	Refer to general condition of contract 23.6.

No.	Query	Response
	fixed to meet the requirements and therefore the commitment will be to fix any failure that may be found and not to replace the equipment.	
3.	<p>With reference to the tender specification, kindly clarify on the quantities needed for</p> <ol style="list-style-type: none"> a) Rubber glove and sleeve tester. b) Line hose and hood tester. <p>The specification for the above test equipment indicates that are combined to test the mentioned electrical items but the schedule of rates and prices gives the needed quantities of the testers in separate manner i.e Glove tester-2,Sleeve tester-2,Line hose tester-1 and Hood tester-1</p> <p>Please clarify the quantity of the above testing equipment with reference to the specification provided or further clarify if the equipment shall be supplied separately as indicated in the schedule of rate and prices (schedule 1)</p>	<p>The requirement is as follows:</p> <ol style="list-style-type: none"> 1) Two Glove testers 2) Two sleeve testers 3) 1 Hose tester 4) 1 Hood tester <p>The specifications for the hose tester and hood tester are the same, but with appropriate fitting as applicable. For 1) & 2) if the equipment share Controls, Two (2) will be supplied to meet the above and similar for 3) & 4)</p>
4.	<p>As per the specification of rubber blanket tester clause 4.2.2.2.2, the tender document required that the equipment to be supplied is supposed to test rubber blankets as large as 1160mm x 1160mm(46'' x 46'') up to class IV.</p> <p>With reference to the sizes of rubber blankets currently manufactured, whereby they are up to size(914 x 914) 36'' x 36'' to complement the rubber blankets currently manufactured</p>	<p>The equipment to be supplied shall test rubber blankets as specified in the bidding document: 1160mm x 1160mm(46'' x 46'') up to class IV.</p>

Yours faithfully,

For: KENYA POWER & LIGHTING COMPANY LIMITED.



ENG. ELIUD LIMO

Ag.PROJECTS DEVELOPMENT MANAGER, TURNKEY

Technical Specification for DC Hipot

1 SCOPE

- 1.1. The specification is for a portable DC Hipot test Set that will be capable of safely performing high voltage dielectric withstands test and insulation resistance test on Switchgear, transformers, rotating machines and insulators and up to 200kV.
- 1.2. The specification also covers the inspection and test of the Hipot DC test set as well as schedule of Guaranteed Technical Particulars to be filled, signed by the manufacturer and submitted for tender evaluation.
- 1.3. The specification stipulates the minimum requirements for the DC Hipot test set acceptable for use in the company and it shall be the responsibility of the Manufacturer to ensure adequacy of design, good workmanship and good engineering practice in the manufacture of the test equipment for KPLC. The supplier shall also submit information which confirms satisfactory service experience with products that fall within the scope of this specification

2. REFERENCES

The following Standards contain provisions which, through reference in this text, constitute provisions of this specification. Unless otherwise stated, the latest edition of the referenced documents (including any amendments) applies.

- IEC 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements.
- IEC 61326: Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements.
- IEC 60950, Guidance Hipot testing of electrical equipments
- IEC 60529: Degrees of protection provided by enclosures (IP
- IEEE 60060-3: High voltage test techniques
- IEC 17025: Standards for air and creepage distances

3.0 TERM AND DEFINITIONS

Hipot - High Potential

4.0 GENERAL REQUIREMENTS

4.1 Design and Construction

- 4.1.1 The DC Hipot Test Set shall conform to the specifications referenced in section 2 of this standard.
- 4.1.2 The DC Hipot test set shall be portable and as light as possible, capable of being easily transported to the field for cable testing.
- 4.1.3 It shall combination Hipot test and HV Megohmmeter capability for field testing applications.
- 4.1.4 The Hipot test set shall have full 'Automatic' or 'Manually' adjustable test option
- 4.1.5 The Hipot test set shall have a separate HV tank and Control box.
- 4.1.6 The Hipot test set shall have external Emergency stop button and zero start interlocks
- 4.1.7 The Hipot test set shall have short-circuit protection , surge and transient protection.
- 4.1.8 The Hipot test set shall have an integral "Emergency-Off" switch.
- 4.1.9 The Hipot test set shall be equipped with automatic internal discharge circuitry.
- 4.1.10 The Hipot shall have a "Key Switch" lockout.
- 4.1.11 The Hipot shall have upgradeable software.

4.2 Operation

- 4.2.1 The Hipot test set shall perform high voltage DC Proof/Hipot tester and high voltage Megohmmeter tests
- 4.2.2 The DC output shall be continuously adjustable from 0-200KVDC at 5mA and the supply shall be 240Vac/50Hz.
- 4.2.3 The Hipot shall have an automatic data logger with adequate storage of test results for later retrieval/download to laptop.

4.3 Test Results

- 4.3.1 The equipment shall generate the test results automatically, and a possibility of exporting them to MS Word or MS Excel for detailed analysis shall be available.

4.3.2 The test set shall be capable of data uploading and downloading to a laptop through RS232 or USB port and/or Ethernet.

4.3.3 The test set shall be equipped with a standard data communication cable for uploading and downloading data.

4.4.0 Self-Diagnostics and Calibration

4.4.1 The test-set shall perform an exhaustive series of self-diagnostics and calibration/validation checks at power-up. If an error is detected, the front panel shall display the nature of the error.

4.5.0 SPECIFIC TECHNICAL REQUIREMENTS FOR DC HIPOT TEST SET

Clause	KPLC Requirement	Bidder's offer (indicate full details of the offered Equipment for each requirement of the specification)
4.5.1	Input Voltage: 240Vac/50Hz	Specify
4.5.2	Output voltage: 0-200KVDC at 5Ma, Continuous	Specify
4.5.3	Output polarity :Negative, Positive grounded	Specify
4.5.4	Output frequency: 50Hz	Specify
4.5.5	Duty: Continuous, capacitive charging	Specify
4.5.6	Control box and HV tank weight: 20Kg/70Kg	Specify
	Voltage/Current displays: Digital LEDs	Specify
4.5.7	Mega ohm meter range: 100Ω-2MΩ	Specify
4.5.8	Safety features: Zero start interlocks, Emergency stop button	Specify
4.5.9	Protection features: surge, transient protection and automatic internal discharge circuitry	Specify
4.6.0	Operating temperatures: -5°C to +45°C	Specify
4.6.2	Memory: At least 50 test records	Specify
4.6.3	Computer Interfaces: RS232 and USB port	Specify
4.6.4	Operating system: Compatible with MS windows 10	Specify
4.6.5	Laptop: Operating system: MS Windows 10, running on Intel core i7	Specify
4.6.6	Accessories: i. Input cable with BS top plug- 3mts	Provide

	ii. Return cable with Clip and boot- 6mts iii. Output cable with Clip and boot- 6mts iv. Ground lead with Clip and boot- 6mts v. Grounding stick with lead and Clip -6mts vi, Rugged Control carrying case with handles vii. Laptop and Communication cables	
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4.7 Accessories (to be supplied with the equipment)

- 4.7.1. Laptop
- 4.7.2. Cable accessories
- 4.7.3 PC to test set communication cable

4.8. Quality Management System

- 4.8.1. The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the Hipot test set physical properties, tests and documentation, will fulfill the requirements stated in the contract documents, standards, specifications and regulations.
- 4.8.2 The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001:2008.
- 4.8.3. The manufacturer's declaration of conformity to applicable standards and copies of quality management certificates including copy of valid and relevant ISO 9001:2008 shall be submitted with the tender for evaluation.

5.0. TESTS AND INSPECTION

- 5.1 The Hipot test set shall be inspected and tested in accordance with the requirements of IEC 61010-1, IEC 60664-1 &3, IEC 61326, IEC 60112 and IEC 60529 standards. It shall be the responsibility of the supplier to perform or have performed the tests specified and whatever other tests he performs at works.
- 5.2. Copies of previous type test Reports issued by a third party testing laboratory that is accredited to ISO/IEC 17025 or routine tests reports shall be submitted with the tender for the purpose of technical evaluation. The accreditation certificate to ISO/IEC 17025 for the same third party testing laboratory used shall also be submitted with the tender document (all in English language)
- 5.3. Copies of type test or routine test reports to be submitted with the tender (by bidder) for evaluation shall be as stated below.

- 5.4. Drawings and sample test reports for the Hipot test set to be supplied shall be submitted to KPLC for approval before shipment/delivery of the goods.
- 5.5 On receipt of the equipment KPLC may perform any of the tests specified in order to verify compliance with this specification. The supplier shall replace without charge to KPLC the Hipot test set which upon examination, test or use, fails to meet any of the requirements in the specification.

5.6 Routinetests required for the equipment

- i. Insulation resistance
- ii. Leakage current of the equipment
- iii. Ground Continuity of the equipment
- iv. Ground bond of the equipment
- v. Dielectric Voltage Withstand test
- vi. Functional tests of the equipment
- vii. Overvoltage and over current withstand
- viii. Short-circuit protection test

6.0 MARKING AND PACKING

- 6.1 The Hipot test set shall be packed in a standard rugged heavy duty robust case with cushion grip handles and rubberized gripping surface for outdoor use (protection category IP X5) in such a manner to avoid damage during transportation.
- 6.2 The housing shall be complete with a gasket to seal the lid when closed so as to protect the instrument against water and dirt while the instrument is carried through rainstorms or other hazardous conditions. The lid shall be secured by two latches and a handle for portability. A compartment shall also be provided for storage of test cables and line cord.
- 6.3 The Hipot test set shall be marked in a permanent manner with the following information (In English language)
- a) Standard to which the Hipot test set complies.
 - b) Name of manufacturer.
 - c) Type of Hipot test set (description of type and model number)
 - d) Year and month of manufacture and serial number.
 - e) The words "Property of Kenya Power & Lighting Co" shall be engraved permanently on Hipot Test set while the other parameters shall be marked on a permanent label.

f) The overvoltage protection category and duty rating.

7.0. DOCUMENTATION AND TRAINING

7.1 Warranty and Training

7.1.1. The supplier shall be responsible for training on the use of the equipment

7.2. Documentation

7.2.1 Copies of the Manufacturers catalogues, manuals, drawings and technical data shall be supplied with the equipment.

7.2.3. The supplier recommendations for use, care, storage and routine inspection/testing procedures all in English language, shall be provided during the delivery of the Hipot Test set.