

The Kenya Power & Lighting Co. PLC. Central Office – P.O. Box 30099, Nairobi, Kenya Telephone – 254-02-3201000-Telegrams 'ELECTRIC'- www.kenyapower.co.ke Stima Plaza, Kolobot Road

Our Ref: KE-KPLC-371792-CW-RFB/SM/aho

02nd November 2023

To: ALL BIDDERS

Dear Sir/ Madam

ADDENDUM NO.2 OF BIDDING DOCUMENT FOR DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING OF SOLAR PHOTOVOLTAIC GENERATION PLANTS WITH ASSOCIATED POWER DISTRIBUTION NETWORK (MINI- GRIDS) IN MANDERA, WAJIR, GARISSA, TANA RIVER, LAMU, NAROK, KILIFI AND KWALE COUNTIES IN KENYA WITH 7 YEARS O&M SERVICES

The following addendum is issued as per requirements of ITB 8.1 of the issued bidding document for procurement of design, supply, installation and commissioning of solar photovoltaic generation plants with associated power distribution network (mini- grids) in Mandera, Wajir, Garissa, Tana river, Lamu, Narok, Kilifi and Kwale counties in Kenya with 7 years O&M services.

RELATIONSHIP WITH THE PRINCIPAL BIDDING DOCUMENT

Save where expressly amended by the term of this addendum, the Principal Bidding Document shall continue to be in full force and effect. The provision of this addendum shall be deemed to have been incorporated, be read and construed as part of the Principal Bidding Document.

1. SECTION II- BID DATA SHEET

ITB 23.1 in the bid data sheet have been amended to read as follows:

ITB NO.	ITB Reference Clause	Particulars
23.1	Deadline for submission of bids	The deadline for bid submission is: Date: 17th November, 2023 Time: 10:00a.m.
26.1	Bid Opening	Bidders shall not have the option of submitting their bids electronically. The bid opening shall take place at: Street Address: Stima Plaza, Kolobot Road, Parklands Floor/ Room Number: Ground Floor- Auditorium City: Nairobi Country: Kenya Date: 17th November, 2023

VOLUME II (SECTION III)-EVALUATION & QUALIFICATION CRITERIA Part of these section have been amended to read as follows

	Criteria					
		Bidder				
Sub-Factor			Joint Venture (Joint Venture (existing or intended)		Documentation
	Requirement	Single Entity	All members combined	Each member	At least one member	Required
3.1 Financial Capabilities	Submission of audited balance sheets or if not required by the law of the Bidder's Country, other financial statements acceptable to the Employer, for any Five (5) years (between 2016 and 2023) to demonstrate the current soundness of the Bidders financial position and its prospective long-term	Must meet requirement	V	Must meet requirement	A / A	Form FIN – 3.1 with attachments
3.2 Average Annual Turnover	Minimum average annual turnover of turnover	Must meet requirement	Must meet requirement	Must meet at least Thirty percent (30%) of the requirement	Must meet at least Seventy percent (70%) of the requirement	Form FIN -3.2
	and 2023					

SECTION X-CONTRACT FORMS

DETAILS OF WORK & SERVICES FOR 7YEARS OPERATION AND & MAINTENANCE OF SPGP & PDN AND RELIABLE SUPPLY TO CONSUMERS: ITEM 4.1-SCOPE OF O&M WORK FOR SPGP

ITEM NO. (XV)-Cost of diesel for DG for supply of energy as per requirement to maintain the regular supply to consumers from the scope has been deleted.

The **entire clause 9.1** under details of work & services for 7 years operation and maintainace of SPGP & PDN and reliable supply to consumers that was reading as below has been **deleted** from the scope of the contractor.

9.1. Contractor shall ensure

- i. Collection of Connection charges from Consumers and
- ii. Revenue collection from consumers on behalf of KPLC for energy consumed by them
- iii. Disconnection if consumers fail to pay bill for energy supplied
- iv. Reconnection on payment of due charges of energy bill
- v. Deposit to collected charges to Govt. /KPLC Account as per KPLC Norms

VOLUME II: EMPLOYERS REQUIREMENT TECHNICAL SPECIFICATIONS

1.2 Scope and characteristics of Solar Photovoltaic (SPV) mini grids

The entire clause 1.2.8 that was reading as below has **been deleted** from the scope of the contractor.

1.2.8 Collection of connection charges from consumers and ensure revenue collection from consumers on behalf of KPLC (including Disconnection and reconnection) and its deposit to Govt. /KPLC Account as per KPLC Requirements/specifications has been deleted.

The following clauses have been amended to read as follows:

2. SOLAR POWER GENERATION PLANT

2.1 Scope of Supply & Work of SPGP

Clause 2.1.2.10 have been amended to read as follows:

2.1.2.10 0.420/11kV step up transformers and 11/0.420kV step down transformers as per requirement

4.18 Diesel Generator PART I - GENSET AND ASSOCIATED COMPONENTS SPECIFICATIONS

4.18.1.5 Generator Set – Prime Power

The generator set shall run at 1500 rpm to supply power at 50Hz. The prime Power rating of the set shall be slightly above the stated kVA, at temperatures up to 45°C and Altitude at site elevation. There shall be a 10% overload capacity available for one hour in twelve. The gen-set shall be enclosed with a super silenced residential silencer having stainless steel flexible bellows and exhausting 6m above ground level applying an extend pipe. The noise level must be below 85db at 1 m.

4.18.1.8.2 Frequency regulation

The frequency regulation shall be isochronous from steady state no load to steady state rated load. The random frequency variation shall not exceed +/- 1.5% of its mean value for constant loads at any load from no load to rated load.

7.2 11kV Power Distribution Network for MV Mini-grids

The clauses listed below have been amended to read as follows:

7.2.1 0.420/11 kV Step-up Transformers.

7.2.2 11/0.420 kV Step-down Transformers.

8.3 Preventive Routine Maintenance of PDN and Consumer Connections as per Requirements/specifications of KPLC (7 years O&M Period)

Clause 8.3.15 have been amended to read as follows:

8.3.15 The Contractor is fully responsible for defects and equipment failure during the **7 years** O&M period.

12. SUPERVISION OF CONSTRUCTION AND COMMISSIONING WORKS

12.1 Completion Time

12.1.1 All mini-grids in each lot (1 to 8) shall be completed within **Fifteen (15) Months** from the Effective Date as described in the Contract Agreement for Supply and Installation.

VOLUME IV: TECHNICAL SPECIFICATIONS (POWER DIS.TRIBUTION COMPONENT)

Technical specification for mineral insulating oil (transformer & switchgear oil) doc No.KP1/3CB/TSP/08/001 has been added and is attached as **Appendix I**.

13. QUALITY ISSUES

An additional sub section has been added to clause 13 and reads as follows;

13.1.9 Factory Acceptance Test (Fat)

FAT shall be carried out for each of the major equipment at the manufacturer's premises. All routine test shall be carried out in the presence of employer's representatives. Contractor shall arrange and meet the full costs of local transport and the cost of inspection and test at the manufactures premises.

KPLC will bear the cost for air travel & accommodations for its representatives.

Yours faithfully,

For: KENYA POWER & LIGHTING COMPANY PLC.

DR JOHN NGENO

GENERAL MANAGER SUPPLY CHAIN & LOGISTICS

APPENDIX I

	TITLE:	Doc. No.	KP1/3CB/TSP/08/001
\ V	SPECIFICATION FOR MINERAL	Issue No.	2
	INSULATING OIL (Transformer & Switchgear Oil)	Revision No.	0
		Date of Issue	2014-04-28
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Issued by: Hend of Section, Tech Stds & Specs	Authorized by: Head of Department, R&D
Signed: The fair	Signed: 12 January
Date: 2014-04-28	Date: 2014-04-28

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TITLE:	
SPECIFICATION FOR MINERA INSULATING OIL (Transformer & Switchgear Oil)	_

KP1/3CB/TSP/08/001
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2014-04-28

0.1 Circulation List

COPY NO.	COPY HOLDER
1	Research & Development Manager
2	Supply Chain Manager (Procurement)
Electronic copy (po	f) on Kenya Power server (http://172.16.1.40/dms/browse.php?fFolderId=23)

0.2 Amendment Record

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
0	2014-04-28	Cancels and replaces issue No. 1 dated 2009-05-18	Michael Apudo	George Ownor
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SPECIFICATION FOR MINERAL INSULATING OIL (Transformer & Switchgear Oil)

Doc. No.	KP1/3CB/TSP/08/001	
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FOREWORD

This specification has been prepared by the Research and Development and Technical Services Departments both of The Kenya Power and Lighting Company Limited (abbreviated as KPLC) and it lays down requirements for Mineral Insulating Oil (Transformer & Switchgear Oil). It is intended for use by KPLC in purchasing the oil.

The manufacturer shall submit information which confirms satisfactory service experience with products which fall within the scope of this specification.

1. SCOPE

This specification is for new, unused mineral insulating oil intended for use in transformers, switchgear and similar electrical equipment in which oil is required as an insulant and for heat transfer.

The specification stipulates the minimum requirements for mineral insulating oil acceptable for use in the company and it shall be the responsibility of the manufacturer to ensure <u>adequacy of the design</u>, good workmanship and good engineering practice in the manufacture of the oil for KPLC.

The specification also covers inspection and test of the oil as well as schedule of Guaranteed Technical Particulars to be filled, signed by the manufacturer and submitted for tender evaluation.

The specification does not purport to include all the necessary provisions of a contract.

NOTE: Mineral insulating oils complying with the requirements of this specification, of the same class and containing no additives shall be compatible with one another and be capable of being mixed in any proportion.

2. REFERENCES

The following standard contains provisions which, through reference in the text constitute provisions of this specification. Unless otherwise stated, the latest edition (including amendments) shall apply.

IEC 60296: Specification for unused mineral oil for transformers and switchgear

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Signed: Est te	Signed: 19 June
Date: 2014-04-28	Date: 2014-04-28



Kenya Power

TITLE:

SPECIFICATION FOR MINERAL INSULATING OIL (Transformer & Switchgear Oil)

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IEC 60156:	Insulating liquids – Determination of the breakdown voltage at power frequency–Test method
IEC 60247:	Measurement of relative permittivity, dielectric dissipation factor and d.c. resistivity of insulating liquids
IEC 60475:	Method of sampling liquid dielectrics
IEC 60666:	Detection and determination of specified anti-oxidant additives in insulating oils
IEC 60814:	Insulating liquids – Oil-impregnated paper and pressboard – Determination of water by automatic coulometric Karl Fischer titration
IEC 61125:	Unused hydrocarbon based insulating liquids – Test methods for evaluating the oxidation stability
IEC 61198:	Mineral insulating oils – Methods for the determination of 2-furfural and related compounds
IEC 61619:	Insulating liquids – Contamination by polychlorinated biphenyls (PCBs) – Method of determination by capillary column gas chromatography
IEC 62021-1:	Insulating liquids – Determination of acidity – Part 1: Automatic potentiometric titration
ISO 2719:	Determination of flash point – Pensky-Martens closed cup method
ISO 3016:	Petroleum products – Determination of pour point
ISO 3104:	Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity
ISO 3675:	Crude petroleum and liquid petroleum products – Laboratory determination of density – Hydrometer method
DIN 51353:	Testing of insulating oils; detection of corrosive sulfur; silber strip test
BS 2000-346:	Methods of test for petroleum and its products Determination of polycyclic aromatics in unused lubricating base oils and asphaltene free petroleum fractions. Dimethyl sulphoxide extraction refractive index method

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SPECIFICATION	FOR MINERAL
INSULATING OIL	(Transformer

& Switchgear Oil)

TITLE:

Doc. No.	KP1/3CB/TSP/08/001	
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3. TERMS AND DEFINITIONS

For the purpose of this specification the definitions given in the reference standards shall apply.

4. REQUIREMENTS

4.1. Service Conditions

The mineral insulating oil shall be suitable for use in transformers and switchgears operating in the following conditions:

- a) Continuous outdoor operation in tropical areas at altitudes of up to 2200m above sea level,
- b) Humidity of up to 95%,
- c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C;
- d) Heavy saline conditions along the coast and
- e) Isokeraunic levels of up to 180 thunderstorm days per year.

4.2. Properties of oil

- 4.2.1. The oil shall be pure hydrocarbon mineral oil, clean and free from impurities, such as suspended solid matter, detrimental chemical compounds and water likely to impair its properties and without additives.
- 4.2.2. The oil shall be chemically stable, PCB (Polychlorinated biphenyls) free and shall conform to IEC 60296 (class 1: un-inhibited oil mineral insulating oil, containing no antioxidant additives).
- 4.2.3. The functional properties of the oil which includes viscosity, density, pour point, water content, breakdown voltage and dielectric dissipation factor shall ensure total impact on its function as an insulating and cooling liquid.
- 4.2.4. The oil shall also be suitable for oil circuit breakers and other electrical equipment in which oil is used as insulating medium.
- 4.2.5. The tests on transformer oil shall be conducted in accordance with the relevant methods detailed in IEC 60296 and shall fully comply with the provisions of this specifications.
- 4.2.6. The characteristic and performance of the oil shall comply with the following:

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SPECIFICATION FOR MINERAL INSULATING OIL (Transformer & Switchgear Oil)

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Table 1: Required characteristics and performance

Description	Test Method	Requirement
a) - Function		
Viscosity at 40°C	ISO 3104	Max. 12 mm²/s
Viscosity at -30°C1	ISO 3104	Max. 1 800 mm²/s
Pour point	ISO 3016	Max40°C
Water content	IEC 60814	Max. 20 mg/kg
Breakdown voltage	IEC 60156	Min. 50kV
Density at 20°C	ISO 3675	Max. 0.895 g/ml
Dielectric dissipation factor at 90°C	IEC 60247	Max. 0.005
b) - Refining/stability		
Appearance:		Clear, free from sediment and
•		suspended matter
Acidity	IEC 62021-1	Max. 0.01 mg KOH/g
Corrosive sulfur	DIN 51353	Not corrosive
Antioxidant additive	IEC 60666	Not detectable
Furfural content	IEC 61198	Max. 0,1 mg/kg
c) – Performance		
Oxidation stability	IEC 61125 (Method	C).
	Test duration : 164 I	h İ
- Total acidity		Max. 1.2 mg KOH/g
- Sludge		Max. 0.8 % by weight
d) - Health, safety and environment	(HSE)	
Flash point	ISO 2719	Min. 135°C
PCA content	BS 2000 Part 346	Max. 3 %
PCB content	IEC 61619	Not detectable
1 This is the standard LCSET for transf	ormer oil. Pour point s	hall be minimum 10 K below LCSET
(Lowest cold start energizing temperate	ure)	

4.3. Quality Management System

- 4.3.1. The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the mineral insulating oil physical properties, tests and documentation, will fulfill the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001:2008.
- 4.3.2. The Manufacturer's Declaration of Conformity to applicable standards and copies of quality management certifications including copy of valid and relevant ISO 9001: 2008 certificate shall be submitted with the tender for evaluation.

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4.3.3. The bidder shall indicate the delivery time of the items, manufacturer's monthly & annual production capacity and experience in the production of the type and size of items being offered. A detailed list & contact addresses (including e-mail) of the manufacturer's previous customers for similar type of the mineral insulating oil sold in the last five years as well as reference letters from at least four of the customers shall be submitted with the tender for evaluation.

5. TESTS AND INSPECTION

- 5.1. The mineral insulating oil shall be inspected and tested in accordance with the requirements of IEC 60296, applicable standards listed in clause 2 and the provisions of this specification. It shall be the responsibility of the supplier to perform or to have performed the tests specified and whatever other tests he normally performs at works.
- 5.2. Copies of previous Type Tests Reports issued by a third party testing laboratory that is accredited to ISO/IEC 17025 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. The mineral insulating oil shall be subject to acceptance tests at the manufacturer's works before dispatch. Acceptance tests shall be witnessed by two Engineers appointed by The Kenya Power and Lighting Company Limited (KPLC). Routine and Sample Test Reports for the oil to be supplied shall be submitted to KPLC for approval before delivery of the goods.
- 5.4. On receipt of the product, KPLC will perform any of the tests specified in order to verify compliance with this specification. The supplier shall replace without charge to KPLC the oil which upon examination, test or use; fail to meet any of the requirements in the specification.

6. MARKING AND PACKING

- 6.1 The following information shall be marked indelibly and legibly and in a permanent manner on each container.
 - i) Manufacturer's Name or Trademark;
 - ii) Type Designation/Classification;
 - iii) Specified Characteristics;
 - iv) Oil Quantity (in liters);
 - v) Batch Number & Date;
 - vi) Material Safety Data Sheet.

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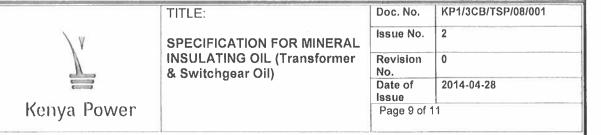
- The oil shall be packed in 200 or 205 or 210 liters metallic drums protected against corrosion.

 The drums shall be clean and suitable for the purpose to avoid any contamination.
- 6.3 Each oil delivery shall be accompanied by a document from the manufacturer specifying at least: manufacturer's designation, oil classification, compliance certificate and indication of the presence (type, concentration) of any additive. Where the material safety data sheet cannot be marked on the container it shall be submitted together with the oil.

7. Documentation

- 7.1. The bidder shall submit its tender complete with technical documents required by Annex A (Guaranteed Technical Particulars) for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:
 - a) Fully filled clause by clause description of the item on offer as per Annex A (Guaranteed Technical Particulars) and signed by the manufacturer;
 - b) Copies of the Manufacturer's catalogues, brochures, safety and technical data;
 - c) Sales records for the last five years and at least four customer reference letters;
 - d) Details of the manufacturer's experience;
 - e) Copies of required type test reports by a third party testing laboratory accredited to ISO/IEC 17025 and a copy of accreditation certificate to ISO/IEC 17025 for the third party testing laboratory;
 - f) Manufacturers letter of authorization, QMS certificate and other technical documents required in the tender.
 - g) The manufacturer shall be required to also provide detailed information regarding the products:
 - Materials identification.
 - · Ingredients and hazards data,
 - · Physical data of the chemicals used,
 - Health hazard information,
 - Summary of risks
 - Target organs
 - First aid to various organs such as eye contacts, skin contacts, inhalation and ingestion
 - Special precautions.
 - Storage segregation
 - Special handling/storage
 - DOT (Department of Transportation Hazard Classification System) class.

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- 7.2. The successful bidder (supplier) shall submit the following documents/details to The Kenya Power & Lighting Company for approval before manufacture:
 - a) Guaranteed Technical Particulars signed by the manufacturer;
 - b) Chemical composition details of the oil to be manufactured for KPLC.
 - c) Quality assurance plan (QAP) that will be used to ensure that the chemical and functional properties of the oil, tests, service capability, maintenance and documentation will fulfill the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001:2008
 - d) Detailed test program to be used during factory testing;
 - e) All documentation necessary for identification and general delivery requirements as specified in IEC 60296, clause 5.4 shall be provided with the oil.
 - f) Manufacturer's undertaking to ensure adequacy of the design, good engineering practice, adherence to the specification and applicable standards and regulations as well as ensuring good workmanship in the manufacture of the oil for The Kenya Power & Lighting Company;
 - g) Packaging details (including packaging materials and quantity).
- 7.3. The supplier shall submit a set of three (3) technical manuals for the oil during delivery specifying at least: supplier's designation, oil classification and compliance certificate. The supplier shall also indicate the presence (type, concentration) of any additive if any, all in the English Language, to KPLC stores.

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ANNEX A: Guaranteed Technical Particulars (to be filled and signed by the <u>Manufacturer</u> and submitted together with relevant copies of the Manufacturer's catalogues, brochures, drawings, technical data, sales records, four customer reference letters, details of manufacturing capacity, the manufacturer's experience and copies of complete type test reports for tender evaluation, all in English Language)

Tender No.Bidders Name and address

Description	Bidder's offer (indicate full details of the values offered)
Manufacturer's Name & Country of Manufacture	
2. Type Designation, Standard & Volume of drum	
1. Scope	
2. Applicable Standards	
3. Terms & Definitions	
4. Requirements	
4.1. Service conditions	
4.2 Properties of oil	
4.2.1 – 4.2.4	
4.2.5 Required characteristics and performance	
a) Viscosity at 40°C, ISO 3104	
b) Viscosity at –30°C, ISO 3104	
c) Pour point, ISO 3016	
d) Water content, IEC 60814	
e) Breakdown voltage – new oil, IEC 60156	
f) Density at 20°C, ISO 3675/ISO 12185	
g) Dielectric dissipation factor at 90°C, IEC 60247	
h) Appearance	
i) Acidity, IEC 62021-2	
j) Corrosive sulfur, DIN 51353	
k) Antioxidant additive, IEC 60666	
l) Furfural content, IEC 61198	
m) Oxidation stability, IEC 61125 (method C -Test	
duration - Uninhibited oil: 164 h)	
-Total acidity	
-Sludge	
n) Flash point ISO 2719	
o) PCA content BS 2000 Part 346	Addition of Adultation (Adultation (Adulta
p) PCB content IEC 61619	

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8.0 Manufacturer's Guarantee and Warranty	
9.0 List catalogues, brochures, technical data and drawings	
submitted to support the offer.	
10.0 List customer sales records and customer reference	
letters submitted to support the offer.	
11.0 List Test Certificates submitted with tender	
12.0 List test reports of the oil to be submitted to KPLC for	
approval before shipment	
13.0 Statement of compliance to specification (indicate	
deviations if any &	
supporting documents)	
14.0 List Acceptance Tests to be witnessed by KPLC	
Engineers at the factory	

Manufacturer's Name, Signature, Stamp and Date

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Date: 2014-04-28	Date: 2014-04-28