KENYA ELECTRICITY GENERATING COMPANY PLC

RFx: 5000014030

KGN-OLK-002-2023

TENDER FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF UNINTERRUPTIBLE POWER SUPPLY BATTERY BANK FOR OLKARIA IV POWER STATION.

(Citizen Contractor)

Dated: **30th November, 2023**

Addendum No.2

In accordance with the **Tender for Supply, Installation, Testing and Commissioning of Uninterruptible Power Supply Battery Bank for Olkaria IV Power Station**, KenGen issues **Addendum No.2** as follows:

AMENDMENT OF FINANCIAL EVALUATION CRITERIA, TECHNICAL REQUIREMENTS AND PRICE SCHEDULE.

No.	Requirements	**Both** **SCHEDULE B** - SUPPLY, TESTING OF UPS SPARES FOR OLKARIA IV POWER STATION & **SCHEDULE C** - SUPPLY, TESTING OF CHARGER SPARES FOR OLKARIA IV POWER STATION - have been **removed** **and are no longer part of the scope of this tender**
1.	Financial Evaluation	Has been revised as below
2.	Price Schedule	Has been revised as below
3.	Supply Requirements	Has been revised as below

STAGE 3. FINANCIAL EVALUATION

Financial evaluation shall involve checking completeness of financial bids

- Award shall be based on the lowest **compliant bidder.**
- Consideration of the prevailing market price and value for money
- Tender sum as submitted and read out during tender opening as per the form of tender is absolute and final and shall not be subject to correction, adjustment or amendment.

A. PRICE SCHEDULE FOR GOODS

PRICE SCHEDULE SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF BATTERIES (DDP, OLKARIA IV POWER STATION)

Item	DESCRIPTION	UNIT of MEASURE	QTY	UNIT PRICE	TOTAL PRICE
1	2V, 1500Ah Lead-Acid OPzS high performance battery; maintenance type	PC	125		
2	Clamps, Inter-cell connectors, paralleling cable connectors complete for all the cells, all accessories & documentation	LOT	1		
3	Decommissioning of existing Battery Bank	LOT	1		
4	Installation, Testing & Commissioning of 240VDC Battery bank	LOT	1		
5	Battery Impedance tester	PC	1		
Sub Total					
Discount (%) if any					
16% VAT					
Total Cost - Delivered at Place (DDP) - Olkaria					
Currency of Tender					
Delivery Period (calendar days)					

Tenderer's name (Company) _____

Signature & Rubber-stamp_____Date_____

B. PART 2: SUPPLY REQUIREMENTS

SECTION V - SCHEDULE OF REQUIREMENTS

TECHNICAL SPECIFICATIONS

FOREWORD

1. This specification covers battery bank for 240Vac UPS systems at Olkaria IV.
2. Olkaria IV Power station is located about 140kms from Nairobi city by road and approximately 45kms from Naivasha town.
3. A tenderer must be quote for the COMPLETE schedule in order to qualify as responsive.
4. The schedule for battery SHALL involve decommissioning of currently installed batteries, installation of new ones, testing, commissioning, training, reports, manuals and drawings handover, and it may involve rack modification by bidder.
5. These specifications describe the basic requirements for goods. Tenderers are requested to submit with their offers the detailed specifications, drawings, catalogues, etc. for the products they intend to supply.
6. All equipment and materials shall be designed, manufactured and tested, in accordance with the latest editions of relevant IEC standards and codes, unless specifically excluded elsewhere in the specification.
7. In execution at site, you shall follow all Statutory & KenGen corporate requirements that includes quality, environment, health & safety, and Kenya Wildlife Services (KWS) requirements

INTRODUCTION AND GENERAL REQUIREMENTS FOR ALL THE ITEMS

a) The specifications in this tender describe the basic requirements for equipment. Tenderer is requested to submit with their offers the detailed specifications, drawings, catalogues, etc. forthe products intended for supply. The bidder shall also factor in their bids any items not exclusively stated in this specification for purposes of completeness.

b) All the ratings and capacities of the equipment to be supplied shall not be less than those required in these specifications. Deviations from the basic requirements, if any, shall be explained in detail in writing with the offer, with supporting data such as calculation sheets,etc. The procuring entity reserves the right to reject the products if such deviations shall be found critical to the use and operation of the products.

c) The bidder shall avail all materials, labour, tools and equipment necessary for installation and commissioning works.

d) Olkaria is located 2000m above sea level and in an area where high concentrations of H_2S (Hydrogen Sulphide) is present. All the exposed electrical components are required to be tinned to forestall effects of corrosion.

e) Accommodation, transport, meals and all other living expenses during the installation and commissioning work for the bidder's employees shall be the responsibility of the bidder.

f) It will be the bidder's responsibility to ensure safety of its personnel and equipment and everypart thereof against risk of fire, explosion, accident, or other damage until the contract has been completed to the satisfaction of KenGen.

g) The Contractor warrants that goods supplied under the Contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Contractor further warrants that all Goods supplied under this Contract shall have no defect, arising from design, materials, or workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied Goods in the conditions prevailing in the country of destination.

h) All goods, materials, components supplied shall not have reached end-of-life or be obsolete at the time of commissioning.

i) The winning tenderer must supply the brand that is highlighted in the submitted bid, failure towhich will lead to rejection during inspection of the delivery.

j) All text on documents provided by the Contractor shall be in the United Kingdom ENGLISH LANGUAGE ONLY. Technical Documentation written in any other language SHALL BE REJECTED

and presumed not to have been submitted. All drawings and documents shall be dimensioned in millimetres. It will be mandatory for all schedules to have a minimum of construction drawings, user & maintenance manuals, factory tests & performance characteristics submitted before commissioning, as two sets of hard and soft copies. The bid shall have all the manuals and brochures for purposes of technical evaluation.

k) Other than IEC Other recognized national and international standards that are acceptable are:
   (i) American National Standards Institute -ANSI
   (ii) International standardization organization – ISO
   (iii) Japanese Industrial Standards – JIS
   (iv) Japanese Electro-technical Commission – JEC
   (v) German DIN

l) Symbols used for electrical equipment and components shall be in accordance with IEC 60617. The tenderer shall establish a coherent system for physical and functional reference designation in accordance with IEC61346. Consistency in drawings shall be maintained.

OLKARIA IV (240Vdc UPS BATTERY BANK)

Introduction and General Requirements

a) The Power station has two steam turbine generator sets, two rated at 11kV, 70MW each.
b) There are two UPS banks that support the 140MW rated Units control systems. One of these banks requires replacement as per specifications in this schedule.
c) For the new bank, the existing rack arrangement and space for the batteries shall be maintained. Slight modifications or complete rack arrangement to accommodate the new batteries shall be done by the bidder to KenGen approval.
d) The bidder shall ensure proper interconnection by utilization of existing cables to the battery charger.
e) Whereas a working UPS is currently available for the 240VDC bank, the bidder shall familiarize themselves with the features of the existing UPS to ensure proper commissioning of the battery bank. The commissioning shall be considered incomplete if the240VDC bank is evaluated by KenGen as unable to be charged by the existing UPS.

Scope

a) Manufacturing, factory testing of 240Vdc battery bank.
b) Decommissioning and removal of old battery bank. This shall include transportation to designated place within Olkaria IV. The decommissioned items shall be handled with care to prevent any adverse effect or damage.
c) Supply, Installation, Testing and Commissioning of 240Vdc Industrial Battery Bank at Olkaria IV Power Station. The works shall incorporate all spares and accessories.
d) Supply 1No digital battery impedance tester as Megger BITE 2 or acceptable equivalent, complete with brochure, calibration certificate, cables, charger and accessories. You will provide brochure alongside the bid for evaluation.

Technical Specifications for the battery bank

a) The bank consists of a total of 118 cells each rated 2Volts (nominal), 1500Ah connected in series to give a bank of 240Vdc, 1500Ah. An additional seven (7) batteries shall be delivered as spares. The total number of batteries will thus be 125.
b) Each individual cell must not exceed L x W x H dimensions of 275mm x 210mm x 800mm so that all the batteries can fit the existing racks without modification.
c) The batteries shall be OPzS type lead acid high-performance and industrial type **(maintenance type)** suitable for control and monitoring systems in power plants and back-up for 240Vac

UPS systems.

(i) The positive plates should be made of pure lead grids of tubular design.

(ii) The negative plates should be industrial pasted type and of grid design.

(iii) Separators should be sintered micro porous PVC to form a complete diaphragm between the plates. The separators should be chemically inert with a high degree of porosity to ensure minimum internal resistance.

(iv) Vent plugs should be designed to eliminate spray but give free exit of gases

(v) The battery should have a transparent container made of flame-retardant material.

d) Each cell shall have printed information giving information on name of manufacturer, model, ampere hour, voltage, IEC standard, month/date of manufacture, country of manufacture, serial number. Any form of stickers to the cell container for this information shall not be accepted.

e) The cells should have a design life of 15 years or more. The batteries should have an option of ceramic vent plugs.

f) The batteries must be manufactured to meet IEC 60086

g) The constant current and constant power discharge characteristics should be as per tables 1 and 2 respectively.

h) The batteries shall meet IEC 60896: Stationary lead-acid batteries for Vented types - General requirements and methods of tests.

i) All batteries in the schedule MUST be from one manufacturer and be of the same manufacturing batch and appropriate brochures MUST beprovided along with the Manufacturers authorization.

j) After acceptable installation and testing, the batteries shall be connected to existing UPS or Charger systems.

Table 1: Constant current discharge characteristics at 20°C

End Voltage V/cell	15 minutes	2 hours	5 hours	10 hours	20 hours
1.70	1178.5	611.7	325.6	188.2	105.4
1.75	1012.9	559.9	312.5	183.6	103.5
1.80	826.5	493.7	289.2	174.7	100.0
1.85	624.6	413.8	254.3	158.2	92.7

Table 2: Constant power discharge characteristics in Watts/cell at 20°C

End Voltage V/cell	15 minutes	2 hours	5 hours	10 hours	20 hours
1.70	1178.5	611.7	325.6	188.2	105.4
1.75	1012.9	559.9	312.5	183.6	103.5
1.80	826.5	493.7	289.2	174.7	100.0
1.85	624.6	413.8	254.3	158.2	92.7

Signed and stamped documentary evidence from the manufacturer corroborating the above data must be provided.

TECHNICAL EVALUATION SCHEDULE

The schedule below shall be filled, with relevant reference in the bid document indicated. This shall form part of technical evaluation.

ITEM	DESCRIPTION	REQUIREMENT	STATEMENT OF COMPLIANCE. BIDDER TO INDICATE REFERENCE IN THE BID DOCUMENT
1	Battery type	OPzS Lead acid high-performance industrial maintenance type battery	
2	Cell nominal rating	2V, 1500Ah	
3	Positive plate & Negative plate type & construction	Indicate with Offer	
4	Individual Cell Dimensions LxWxH mm	275x 210x 800mm or smaller	
5	Battery Manufacturer	Indicate manufacturer	
6	Discharge data conforming to tables 1 and 2 in the technical specifications.	To be submitted with offer	
7	Stamped, signed and dated Manufacturer Constant Current and constant power Discharge curves and/or data sheets	To be submitted with offer	
8	Clamps and inter cell connectors complete with adequately rated copper cable connectors for parallel and series connections	Stainless steel or high-grade plated brass	
9	Flexible insulated jumper Wires/Conductors	To be provided	
10	Appropriate Labelling (Provide documentary evidence)	Yellow on a black background	
11	Similar Manufacturing Batch	To be submitted with offer	
12	Warranty	Minimum 1 year from date of Commissioning	
13	Documentation/Brochures to	To be submitted	
14	Demonstrate industrial application and high performance	with offer	

15	Delivery period	To be indicated with offer	
16	Authentic Manufacturers Authorization (signed, stamped and dated)	To be submitted with offer	
17	Bidders experience in supply, installation testing and commissioning of batteries of similar nature and complexity	Provide evidence of two jobs of similar or large magnitude in the last three years in areas of industrial battery banks.	
18	Testing and commissioning equipment (inclusive of charging and discharging)	Submit brochure of equipment with the bid	

INSTALLATION AND COMMISSIONING OF THE BATTERY BANKS

The following SHALL form the minimum requirements for installation, tests and commissioning of the UPS battery bank.

1. The supplier shall deliver the batteries dry charged or filled charged to the Olkaria IV Power Station store, packed in a manner that shall be suitable for handling using either forklift or overhead crane facility
2. Adequate quantities of electrolyte (dilute sulphuric acid) shall be supplied by the bidder. Empty electrolyte containers and any remaining electrolyte shall be left at KenGen site. The filling of the acid shall be done at site, however, pre filled batteries will be accepted.
3. Bidder must have capacity to install, test and commission the batteries.
4. Cells to be supplied shall be maintenance type OPzS, with all the necessary clamps, connecting links/flexible jumper cables, terminal shrouds, terminals/connecting links insulating covers, bolts, nuts and washers in adequate quantities to interconnect all the cells into sets of appropriate voltage banks.
5. All connection bolts, nuts, washers & lock washers shall be of stainless steel or high-grade plated brass so as to last the lifetime of the batteries. All these items shall withstand corrosive Hydrogen sulfide which is prevalent in the installation environment
6. Flexible jumper wires for implementing parallel/series connections must also be supplied. All the exposed parts shall be corrosive resistant to acid and hydrogen sulphide
7. After installation at site, the batteries shall be tested and commissioned by the bidder. The tests shall include temperature rise, individual cell voltage & specific gravity, battery bank capacity test (charging and discharge) among others. The charging and discharge kit for capacity test will be provided by the bidder.
8. The final voltage after a 10-hour discharge rate shall be in accordance with IEC- 60896 or more superior standards.
9. Each cell shall have a number printed on the battery. It is not mandatory that the cell number be printed on the battery. However appropriate labels for numbering the cells must be used. These should be waterproof and should be yellow on a black background. They should be of stick-on type. Handwritten labels will not be accepted.
10. After tests using the external charging/discharge kit, the battery bank shall be connected to an existing constant voltage battery charger or UPS. The cells will therefore be subjected to a constant trickle or float charge while on standby.
11. A warranty of 1 year from the date of commissioning MUST be provided within which defects noted and not attributable to the Client, shall be addressed by the Supplier.

12. The bidder shall supply all the tests and commissioning equipment before the accepted batteries are connected to KenGen system. Bidders shall state the make and model of their testing & commissioning equipment especially the discharge equipment in their bid, and this shall form part of technical evaluation. Provision of alternative equipment at point of delivery MUST be approved by KenGen and has to be of the same or superior specifications than the ones outlined in the bid.

SUPPLIER ACKNOWLEDGEMENT OF ADDENDUM NO.2

We, the undersigned hereby certify that the Addendum No.2 is an integral part of the document and the alterations set out in Addendum has been incorporated in the Tender Proposal.

Signed……..

Tenderer……..

Date…….....