



KenGen
KENYA ELECTRICITY GENERATING COMPANY PLC

KG-ICT-006-2025
**TENDER FOR SUPPLY AND INSTALLATION OF DATA ANALYTICS,
REPORTING AND BACKUP APPLIANCE.**
Rfx 5000016475
(OPEN NATIONAL)

Date: 25th March, 2025

ADDENDUM NO.2

In accordance with the ‘Tender for Supply and Installation of Data Analytics, Reporting and Backup Appliance’, KenGen hereby issues **Addendum No. 2** as follows:

I. EXTENSION OF TENDER

The tender has been extended as follows;

INITIAL TENDER CLOSING DATE	REVISED TENDER CLOSING DATE
closing date 2nd April, 2025 at 10.00 a.m.	closing date 16th April, 2025 at 10.00 a.m.
opening date 2nd April, 2025 at 10.30 a.m.	opening date 16th April, 2025 at 10.30 a.m.

2. STAGE 2: TECHNICAL EVALUATION ON CAPACITY TO DELIVER THE CONTRACT

Technical evaluation shall be carried out only if the tender is determined to be responsive to the preliminary examination.

Bidder **must** demonstrate conformance to the all the technical specifications and schedule of requirements as per section V of the tender document, and as tabulated below.

No	Requirements	Tenderers response (PASS/FAIL)
TR I	Technical schedules must be completed in their entirety by the bidder at the time of bidding. Any entry not filled will render the bid unresponsive. Statements such as “compliant to specifications” or such similar statements shall not be accepted where a specific value e.g. device model, rating, manufacturer etc. is required in the bidders guaranteed offer column. All documentation necessary to evaluate whether the equipment offered is in accordance with this specification shall be submitted with the Bid offer. The bidder shall indicate the reference page where this information is found in the bid document for evaluation process.	

	The bidder is to duly fill the technical schedules as per table 2.8. Technical Schedules	
TR 2	Evidence of at least 5 Similar projects in similar industry i.e Energy, Oil & Gas, Manufacturing... of the same magnitude with clear contact details.	
TR 3	<p>PERSONNEL QUALIFICATIONS</p> <p>The personnel listed below shall be responsible for the execution of their roles in the scope of the project.</p> <p>a) Project Manager The project manager shall have at least 5 years of experience in project management, with experience in IT/OT integration projects.</p> <p>Shall oversee the project, manage timelines, budgets, and resources, ensure communication between teams.</p>	
	<p>b) Data Architecture Specialist Shall have at least 5 years of experience in data platform design</p> <p>Expertise in data modeling</p> <p>Knowledge of both relational and time-series databases</p> <p>Understanding of data governance frameworks</p> <p>Key Skills: Data modeling, database design, cloud architecture, ETL frameworks, python etc.</p>	
	<p>c) OT/IT Data Integration Specialists Data integration engineers shall have at least 5 years of experience in data integration, ingestion and staging of the diverse data sources, and in industrial communication protocols</p> <p>Expertise</p> <ul style="list-style-type: none"> - Industrial communications e.g. DCS/SCADA, IoT, Modbus, OPC UA, MQTT etc. - Industrial network architecture - Secure data extraction from legacy systems - Working understanding of different databases 	
	<p>d) Data Engineer Data Engineer shall have at least 5 years' experience in data collection, cleaning, processing and transformation of data. Shall have experience in big data and building and maintaining data pipelines.</p>	

	<p>Key Skills: SQL, Python, Spark, ETL tools, data warehousing, cloud platforms (e.g. Azure etc.).</p>	
	<p>e) Data Analytics Engineer Associate Shall have at least 5 years' experience in Extracting insights from data to support decision-making.</p> <ul style="list-style-type: none"> - Analyze trends and patterns in data. - Create dashboards and reports. - Work with stakeholders to define business metrics. - Perform exploratory data analysis (EDA). <p>Key Skills: SQL, Excel, Python/R, data visualization (Power BI, Tableau), statistics.</p>	
	<p>f) Business Intelligence Analyst Shall have at least 5 years of experience in managing data retrieval and analysis. Transforming data into actionable insights through reporting and dashboards.</p> <p>Key Skills: SQL, Power BI, Tableau, business acumen, KPI development.</p>	
	<p>g) Machine Learning Engineers Shall have at least 5 years of experience in ML model development</p> <p>in designing, developing and building AI models using ML algorithms and deep learning.</p> <p>Experience:</p> <ul style="list-style-type: none"> - Predictive analytics - Domain Expertise - Predictive maintenance - Anomaly detection - Performance optimization algorithms 	
	<p>h) Cloud Architect Engineer Shall have 5 years in designing and implementing cloud solutions and cloud computing system.</p> <p>Expertise in cloud platforms (e.g. Azure, etc.), security & networking, orchestration & automation, serverless computing, and data management.</p>	
	<p>i) OT/IT Security Architect Shall have at least 5 years of experience in industrial cybersecurity with skills in:.</p>	

	<ul style="list-style-type: none"> - Cybersecurity Frameworks & Standards - Network Security - OT Security - IT Security - Threat Detection & Response - Cryptography & Data Protection - Penetration Testing & Vulnerability Management <p>Relevant Certifications e.g. CISSP- Certified Information Systems Security Professional, CISM- Certified Information Security Manager etc.</p>	
TR 4	<p>Work program</p> <p>The work schedule shall be prepared in the form of a Critical Path Method Network, covering the training, engineering design, FAT, delivery of equipment, installation, testing, commissioning and site training, sufficient detail defining the various sections of the Works, including equipment to be supplied by the bidder.</p>	
TR 5	<p>Method statement</p> <p>The bidder shall give details of the technical approach to be used in implementation of this project. This shall include the tests to be carried out whose test results shall form the baseline data for the power plant information management systems and business systems.</p>	
TR 6	<p>Knowledge and skills transfer</p> <p>The bidder shall detail how KenGen technical personnel shall be incorporated in the design, installation and commissioning to ensure skill transfer is realized. The bidder shall demonstrate active hands-on participation of KenGen's technical personnel in the implementation strategy. The first site will be implemented alongside KenGen staff, and the subsequent sites the bidder will guide, and support the KenGen staff implementing. This does not transfer the project implementation role from the contractor but to ensure knowledge transfer and competency. It is the responsibility of the contractor to ensure successful implementation of the project.</p>	
TR 7	<p>Site Organizational Chart</p> <p>The bidder shall provide a project organizational chart illustrating the key personnel to be involved in the project.</p>	

	<p>CVs of these key personnel shall be provided with the bid offer. The key personnel include but not limited to:</p> <ul style="list-style-type: none"> • Main and alternate Project manager • Main and alternate Data engineer • Main and alternate Cloud Architect Engineer • Main and alternate OT/IT Security Architect • Main and alternate Data Analytics Engineer Associate • Main and alternate OT/IT Data Integration Specialists • • Main and alternate Cloud Architect engineer • Main and alternate Business Intelligence Analyst • Main and alternate AI and Machine Learning Engineer 	
TR 8	<p>Design proposal</p> <p>The bidder shall give detailed design proposal of the technical approach to be used in implementation of this project. This shall include the technical data sheets, proposed hardware, software and licensing regime, manufacturers authorization and tests to be carried out during commissioning.</p> <p>Clear design demonstration showing proposed solution with functional IT/OT Integration, an on-premises enterprise data platform handling at least 100,000 tags, data lake and warehouse deployment, advanced analytics with AI/ML models, Plant use cases and expected visualization and reporting (Include the schematic drawings).</p>	

3. TECHNICAL SPECIFICATIONS

The below technical specification is enhanced as follows:

SCOPE OF WORKS

~~Factory Acceptance Testing (FAT)~~

Inspection, Testing, and Solution Acceptance

There shall be a formal Inspection, Testing, and Solution Acceptance process conducted at the vendor's/OEM's factory to validate the functionality and performance of the proposed solution prior to installation at the project site. As part of this exercise, the bidder shall simulate a virtual KenGen environment to demonstrate the solution's capabilities. The bidder is required to configure the OT/IT environment within this simulated setup and demonstrate full integration between the two networks, including the implementation of necessary security controls.

A knowledge transfer component shall also be incorporated during this factory-based Inspection, Testing, and Solution Acceptance phase. This component will involve six (6) KenGen technical staff to ensure a thorough understanding of the delivered solution and to build capacity for effective participation in the project implementation. The entire process, including knowledge transfer, shall be conducted before commencement of site works and shall last a minimum of two (2) weeks to ensure that the technical team is adequately prepared to support the installation.

In addition, a separate Data Analytics Management Training shall be conducted at the vendor's/OEM's factory for a team of five (5) ICT management staff. This training will be carried out over a period of at least One (1) week and is intended to onboard the ICT management team into the implementation and oversight of the Data Analytics solution.

Data analytics Technical Training (2 Weeks)

The trainings shall cover but not limited to:

- i. Introduction to the Data Analytics System
- ii. Data Analysis Techniques, and Data Exploration and Visualization
- iii. Trend analysis and anomaly detection
- iv. User Access and Security
- v. Backup and disaster recovery strategies
- vi. Log analysis and troubleshooting
- vii. Performance tuning and resource allocation
- viii. Scalability considerations
- ix. Data Integration and ETL Processes
- x. Connecting data sources (SCADA, DCS, IoT devices, etc.)
- xi. Managing data pipelines
- xii. Working with time-series data and industrial data historians
- xiii. Optimizing database performance
- xiv. Machine Learning and AI Integration, Anomaly detection using AI
- xv. Predictive maintenance models and Data preprocessing for ML models

- xvi. Developing Custom Analytics and Reports
- xvii. Writing SQL queries for data extraction, Developing Python or R scripts for advanced analytics
- xviii. Automating reporting workflows
- xix. Industrial cybersecurity best practices and Compliance Considerations and Data governance policies

Data Analytics Management Training Course Content (1 week)

The training shall cover but not limited to:

- i). Introduction to Data Analytics and Business Value
Key concepts, business value, lifecycle, and management's role.
- ii). Data Ecosystem and Architecture
Data sources, ingestion, storage (lake/warehouse), and architecture.
- iii). Data Governance, Quality, and Security
Governance, data quality, compliance, and cybersecurity.
- iv). Advanced Analytics and AI/ML Overview
Overview of AI/ML, use cases, roles, and common tools.
- v). Data Visualization, Dashboards, and Reporting
Visualization principles, dashboards, KPIs, tools demo.
- vi). Project Implementation and Change Management
Implementation phases, stakeholder management, budgeting, risk.
- vii). Hands-on Demonstration and Strategy Planning
Tool demo, simulated data, roadmap development, alignment with goals

The bidder shall submit a comprehensive training program and content for client's review and approval. All the above shall form part of the evaluation requirement. KenGen reserves the right to vary the training quantities during award. KenGen shall meet the cost of the round-trip air tickets, accommodation and allowances of the trainees. Local official transport costs at the foreign country and any other associated costs shall be borne by the bidder.

The below technical specifications is expunged from the tender document and replaced with;

SCOPE OF WORKS;

~~The project shall be implemented in the following phases:~~

~~Phase I: Geothermal Region Installation, configuration, testing and commissioning~~

~~Phase II: Eastern Region and Turkwel Installation, configuration, testing and commissioning~~

~~Phase III: Thermal and wind Installation, configuration, testing and commissioning~~

~~Phase IV: Western Region Installation, configuration, testing and commissioning~~

The project shall be executed as a single phase and will cover the following scope:

- Data Acquisition and Ingestion
- Data Lake Implementation
- Data Warehouse Implementation
- Systems Integration

- Advanced Analytics
- Data Mining and Business Intelligence
- Data Visualization and Reporting-
- Implementation of Use Cases-At least one (1) plant per Region/Generation mode and Enterprise functions
- At least 10 KPI and 5 dash boards per use case

Note:

- KenGen has provided the hardware and necessary infrastructure for the on-premises setup. The bidder is required to submit detailed design requirements to support and align with this infrastructure. All Microsoft licenses is KenGen's responsibility, but the bidder shall clearly demonstrate their usage and licensing requirements through a detailed design matrix outlining system components, their functions, interconnections, and compliance with licensing terms.
- Tableau licenses are dropped from the tender and will not be part of the scope unless deployed as a complete data analytics solution.
- CCNA (Network Administration CCNA (200-301) (Fifteen (15) Staff) One (1) Week
-) Training is dropped from the tender's scope.
- All other licenses quoted shall be supported for at least 2 years.

Service Level Agreement

Include a draft 24/7 support Service Level Agreement (SLA). This shall be quoted and shall be negotiated for during Project handover.

Contract valid for 2 Years

Delivery period is 6 months

The Data Sources are not limited to:

- i). Geothermal Region Systems-Olkaria IAU, II, IV, V, Geoscientific and drilling systems-Geophysics, Geochemistry, Geology, GIS etc.
- ii). Eastern Region Systems-Masinga, Kamburu, Gitaru, Kindaruma, Kiambere, Tana, Wanjii, Turkwel
- iii). Western Region Systems-Sangoro, Sondu, Muhoroni
- iv). Thermal Systems-Kipevu III.
- v). Ngong wind farm Systems -Gamesa and Vestas systems
- vi). Enterprise Systems-SAP ERP, Flat Files, other relevant Documents/Systems etc.

4. PRICE SCHEDULE:

The price schedule is amended to Schedule I, II and III as follows; KenGen reserves the right to award any schedules during the evaluation period

DETAILED PRICE SCHEDULE -SCHEDULE I

No	Description	Unit of Measure	Quantity	Unit Price	Total Price
1.	Data Platform Architecture Designs & Inspection, Testing and good acceptance at factory. OT/IT Pre-design, Platform Design Completion and approval and Factory Acceptance (FAT).	Lot	1		
2.	OT/IT Data Integration/Data Lake/Data Warehousing i) Fetching data from OT to IT ii) Data Integration-combining data from different sources into a unified view. iii) Implementation of the Data Intelligence Platform	Lot	1		
3.	Data Mining, Data Analytics, Artificial & Business Intelligence and Data Training i) Data Analytics, Visualization, Reporting & Dashboard. ii) Artificial Intelligence and Machine Learning Models development.	Lot	1		
4.	Installation, testing and Commissioning.	Lot	1		
5.	Other materials required to successfully implement the project and meet the defined scope. (List and indicate costs)				
Sub-Total					
Other Charges (Bidder to Specify)					
16% VAT					
GRAND TOTAL					
Currency					

TENDER'S NAME:

TENDERER'S SIGNATURES:

COMPANY'S STAMP:

DETAILED PRICE SCHEDULE -SCHEDULE II

No	Description	Unit of Measure	Quantity	Unit Price	Total Price
1.	Delivery of Laptops	Piece	(7)		
	i) Hardware delivery (7) Laptops				
	ii) Software delivery				
	iii) Software Installation & Configuration.				
	iv) License Activation.				
2.	Delivery of 5 screens	Piece	5		
Sub-Total					
Other Charges (Bidder to Specify)					
16% VAT					
GRAND TOTAL					
Currency					

TENDER'S NAME:

TENDERER'S SIGNATURES:

COMPANY'S STAMP:

DETAILED PRICE SCHEDULE -SCHEDULE III

No	Description	Unit of Measure	Quantity	Unit Price	Total Price
I.	Onsite Hands-on training on the implemented end to end solution at the Procuring entity premises. a) Thirty (30) General User 5 days b) Twenty (20) Technical User 5days c) Ten (10) Developers 5 days	Lot	I		
Sub-Total					
Other Charges (Bidder to Specify)					
16% VAT					
GRAND TOTAL					
Currency					

KenGen reserves the right to award any schedules during the evaluation period.

TENDER'S NAME:

TENDERER'S SIGNATURES:

COMPANY'S STAMP:

5. SPECIAL CONDITIONS OF CONTRACT

Payment terms in clause SCC 12 is amended as follows;

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract																		
SCC.12 Payment terms	<p>The method and conditions of payment to be made to the Supplier under this Contract shall be as follows: a)The payment for this tender shall be structured with the following milestones: LOT I</p> <table border="1" data-bbox="483 510 1469 1722"> <thead> <tr> <th data-bbox="483 510 699 584">MILESTONE (S)</th> <th data-bbox="699 510 1203 584">SCOPE</th> <th data-bbox="1203 510 1469 584">PERCENTAGE (%)</th> </tr> </thead> <tbody> <tr> <td data-bbox="483 584 699 752">1.</td> <td data-bbox="699 584 1203 752">Pre-Installation survey, Pre-design, Platform Design Completion and approval, Inspection, Testing, and Solution Acceptance process and associated Trainings.</td> <td data-bbox="1203 584 1469 752">15</td> </tr> <tr> <td data-bbox="483 752 699 1043">2.</td> <td data-bbox="699 752 1203 1043"> Delivery of Software and hardware. i). Hardware delivery (7 Laptops & 5 screen s) ii). Software delivery iii). Third Party Integration software/licenses License Activation. </td> <td data-bbox="1203 752 1469 1043">15</td> </tr> <tr> <td data-bbox="483 1043 699 1435">3.</td> <td data-bbox="699 1043 1203 1435"> i) IT/OT Integration ii)Enterprise Data Historian/Data Platform at least 100K tags iii) Data Lake and Data Warehousing deployment iv) Advanced Data analytics v)Prove of Visualization Artificial Intelligence and Machine Learning Models development. vi) Use case deployment at the plants </td> <td data-bbox="1203 1043 1469 1435">50</td> </tr> <tr> <td data-bbox="483 1435 699 1655">4.</td> <td data-bbox="699 1435 1203 1655"> i) Onsite Handson training on the implemented end to end solution at the Procuring entity premises. a) Thirty (30) General User 5 days b) Twenty (20) Technical User 5days c) Ten (10) Developers 5 days </td> <td data-bbox="1203 1435 1469 1655">10</td> </tr> <tr> <td data-bbox="483 1655 699 1722">5.</td> <td data-bbox="699 1655 1203 1722">Retention</td> <td data-bbox="1203 1655 1469 1722">10</td> </tr> </tbody> </table> <p>Payment Terms and Conditions Local Suppliers Payment shall be thirty (30) days upon delivery, Inspection, and acceptance and receipt of invoice. Local suppliers shall be paid through Electronic Funds Transfer (EFT).</p> <p>There shall be a retention of 10% to be paid after DLP</p> <p>Advance Payment Advance payment is not applicable.</p>	MILESTONE (S)	SCOPE	PERCENTAGE (%)	1.	Pre-Installation survey, Pre-design, Platform Design Completion and approval, Inspection, Testing, and Solution Acceptance process and associated Trainings.	15	2.	Delivery of Software and hardware. i). Hardware delivery (7 Laptops & 5 screen s) ii). Software delivery iii). Third Party Integration software/licenses License Activation.	15	3.	i) IT/OT Integration ii)Enterprise Data Historian/Data Platform at least 100K tags iii) Data Lake and Data Warehousing deployment iv) Advanced Data analytics v)Prove of Visualization Artificial Intelligence and Machine Learning Models development. vi) Use case deployment at the plants	50	4.	i) Onsite Handson training on the implemented end to end solution at the Procuring entity premises. a) Thirty (30) General User 5 days b) Twenty (20) Technical User 5days c) Ten (10) Developers 5 days	10	5.	Retention	10
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5.	Retention	10																	

BIDDER'S ACKNOWLEDGEMENT OF ADDENDUM NO.2

We, the undersigned hereby certify that the addendum is an integral part of the tender document and the alterations set out in addendum has been incorporated in the tender Proposal.

Signed

Bidder

Date