KENYA ELECTRICITY GENERATING COMPANY PLC

KGN-HYD-004-2024

RFx: 5000014464

TENDER FOR DESIGN, MANUFACTURE, DELIVERY, INSTALLATION, TEST AND COMMISSIONING OF TWO FRANCIS TURBINE RUNNERS FOR KAMBURU POWER STATION
(Open International)

Date: 22nd March, 2024

Clarification No 3.

In Accordance with the **"Tender for Design, Manufacture, Delivery, Installation, Test and Commissioning of Two Francis Turbine Runners for Kamburu Power Station"** KenGen hereby issues **Clarification No 3.** as follows:

Clarification Required	Response
GCC 13.1 and GCC 28.3 have contradicting values for contract duration - Please confirm which is valid.	Both are clarified under the Special conditions of the contract GCC13.1 refers to the delivery period and contract duration of the finished runners to the site GCC 28.3 refers to the warranty period. **Kindly refer to addendum No.4**

Regarding operating the unit at 35MW – Though the specifications require the unit to operate from 14 to 35MW, it is not clear under which conditions the unit must achieve 35MW (and how often the unit is expected to run at 35MW). If the operating pattern for the unit is available, we would be able to optimize the design without compromising on the efficiency of the operating points the unit would typically operate.	The plant operating range is 14-32.5MW. The supplier shall demonstrate that their preferred turbine model can be able to achieve 32.5MW while still achieving the specified efficiencies in addendum 3 of this tender.
Capability of waterways/distributor – it is not clear if the existing waterways and the distributor could handle the additional flow to meet the improved performance. We would like to know if KenGen is open to any modifications to the distributors.	Minimal modifications on the existing waterways and distributor shall be allowed to ensure the runner meets the required performance requirements. Where an existing part needs to be replaced due to a requirement in the bidder's design, the bidder shall indicate that a part of his scope and justify the need in detail in his technical proposal.
Model test – We noticed that KenGen have included a model test in addendum 2, without considering its impact on the contract period. We believe that a model test would significantly increase the contract duration (and price) and therefore would like to know what KenGen's expectations are with relation to the specified model test and CFD analysis.	A homologous model test carried out by the bidder/manufacturer, which is not more than 10 years old shall be used as the baseline for the hydraulic development of the new runner. The results of this baseline shall be verified by a 3rd party witness. The bidder shall justify this selection in his report. The baseline model shall have greater efficiency than the design offered in the bid. The bidders shall provide detailed calculation reports in line with the applicable international standards on how the details of the baseline model are used for the design calculation. (efficiency/cavitation etc.). Bidder shall use these test results to justify the efficiency and other performance criteria of the offer and respective performance guarantees. The offered design shall be optimized to avoid overstressing of the components during operation. The bidder shall provide a report detailing and justifying the calculations. Component stresses shall be calculated with analytical methods or with FE analysis. This shall be in line with relevant IEC, ASME, or equivalent international standards e.g. IEC 60034-33.

	After commissioning, the bidder shall perform an onsite runner stress measurement in line with IEC 60994 or eq. international standard. Upon completion of this test, the contractor shall provide a report summarizing the test results. The bidder shall provide means to optimize the start-up sequence to extend the operation life of the turbine. The cost of such a test shall be included as a part of the bid.
Efficiency calculation considered in Addendum 2 : There seem to be a typo. We assume the efficiency at 100%, 80% and 60% of the rated power at each design head should be considered. Please confirm.	The efficiency calculations shall be considered at the rated power of each design head. The weighted efficiency calculations shall also be calculated at 90% updating the efficiency calculations to: $$\eta_t\,(AV) = 0.4\eta_{t100} + 0.3\eta_{t90} + 0.25\eta_{t80} + 0.2\eta_{t60}$$ $$Where\ \eta_t\,(AV) = Weighted\ average\ efficiency$$ $\eta_{t\,100} =$ $efficiency\ at\ 100\%\ of\ rated\ output\ at\ the\ design\ head\ of\ \ldots\ m$ $\eta_{t\,90} =$ $efficiency\ at\ 90\%\ of\ rated\ output\ at\ the\ design\ head\ of\ \ldots\ m$ $\eta_{t\,80} =$ $efficiency\ at\ 80\%\ of\ rated\ output\ at\ the\ design\ head\ of\ \ldots\ m$ $\eta_{t\,60} =$ $efficiency\ at\ 60\%\ of\ rated\ output\ at\ the\ design\ head\ of\ \ldots\ m$ The bidder shall demonstrate how they arrive at the given weighted average efficiencies in his bid. Upon installation, the contractor shall perform efficiency measurement test, inline with applicable international standard to demonstrate the performance of the design. The bidder, in his bid, shall clearly indicate the applicable tolerances for the proposed efficiency test type and justify the selection.

The spare material requested in Addendum 2 refers to 100kg of welding material without referring to the welding procedure. What is the procedure KenGen plan to carry out? (TIG, MAG, Solid Wire or Cored Wire?) and what is the wire diameter?	Based on the failure modes established in the FMEA or equivalent analysis, the contractor shall propose the best repair welding method, and the type and size of repair material in their bid.
What is the expected date of commencement for the contract?	The commencement date shall be determined by a successful bidding process. The tentative project commencement date shall be May 2024 or before.
In addition, while thanking you for extending the bid due date till 27th March 2024, we would like to point out that the changes made in addendum 2 dated 5th March has a significant impact on the offer preparation and therefore we would appreciate if you could consider a further extension of the bid due date.	**Kindly Refer to addendum No.4** **There shall be not further extension of this tender. All bidder's clarifications shall be addressed within this specified time as per the requirements of this tender.**

ACKNOWLEDGEMENT OF CLARIFICATION No. 3

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

Signed……

Tenderer……

Date……