**SHORT TERM TENDER**

**BIT/PUR/STT/EEE/20-21//IC000710/2021 DATE:27/02/2021**

To,

**M/s. ..............................................**

Dear Sir,

Subject : Request for Quotation for Procurement PANNEL FOR AC-DC HYBRID MICRO GRID SYSTEM

You are requested to submit most competitive rates(s) for the following item(s) as per details given below (Sealed Quotations may be sent by hand or by post):

|  |  |
| --- | --- |
| Last date and time for submissions of complete Quotations by  Email to dr.[purchase@bitmesra.ac.in](mailto:purchase@bitmesra.ac.in), [purchase.sanjay@bitmesra.ac.in](mailto:purchase.rakesh@bitmesra.ac.in) sealed quotations can be submitted to the under mentioned address. | **15.03.2021 15:00 Hrs.**  ( If all LTE Vendors submit the quotation prior to the submission date, the quotations will be opened prior to last date of submission.) |

|  |  |  |
| --- | --- | --- |
| Sr.No. | Item Description | **Quantity** |
| 1 | PANNEL FOR AC-DC HYBRID MICRO GRID SYSTEM  PANEL FOR AC-DC HYBRID MICROGRID  1. dc motor- generator set (2 hp,3 kVA, 415V):- 1 NO.  2. LC filter:- 2no.  3. AC- DC bidirectional converter (415v/600DC):- 2NO.  4. dc-dc BUCK COOST BIDIRECTIONAL CONVERTER 3 NO.  5. DC-DC BUCK CONVERTER :- 2 NO  6.DC-LINE DISTRIBUTION MODEL (6 OHMS, 10 AMP (THREE TAPPINGS)):-3 NO.  7.ISOLATION TRANSFORMER(415/415v):1NO.  8. DATA ACQUISITION SYSTEM  9.PIC/ARM/STM32 BASED EMBEDDED SYSTEM    DETAILS AS PER ANNEXURE BELOW | **01 Nos.** |

Sealed Quotation may be submitted superscribed with reference number as appended hereunder:-

|  |
| --- |
| Quotation for Supply of ----  Ref.No. -------- **BIT/PUR/STT/EEE/20-21//IC000710/2021**    To,  Dy. Registrar (Purchase)  Birla Institute of Technology From : M/s----------------------------------------  Mesra , Ranchi , Jharkhand Address : ----------------------------------------  835215 Contact No. -------------------------------------  Email ID--------------------------------------- |

GST Exemption: The Institute is partially exempted from the payment  
of GST vide GOI Notification No.45/2017-Central Tax (Rate), dated  
14.11.2017 and 47/2017-Integrated Tax (Rate), dated: 14.11.2017 the applicable IGST will be at the rate of 5%. Necessary documents (DSIR) and related certification will be provided.

1. HSN code of the material should be mentioned in quotation.
2. All entries in the quotation should be typed or computer printed without any ambiguity and should be free from correction etc. Hand written offers will be rejected.
3. Late and delayed tenders will not be considered. In case any unscheduled holiday occurs on prescribed closing date the next working day shall be the prescribed date of closing.
4. The quotation should be submitted with descriptive literature & drawing. The make of the items offered should be clearly specified.
5. Material should be confirming to our specification. The deviations if any should be clearly indicated in the quotations.
6. Successful bidder has to furnish the OEM test certificates along with the materials (if applicable).
7. Rate /Price: The offered price shall be on **FOR BIT Mesra on Door Delivery basis**.
8. If offered Price Term is other than the FOR-Destination term, approximate Freight & forwarding charges along with the applicable Insurance charges may be mentioned.
9. Details of GST registration, PAN No. should be furnished along with quotations.
10. Purchaser will not pay separately for transit insurance/taxes (if any) and the supplier will be responsible until the stores arrive in good condition at the destination.
11. Warranty: Period of warranty should be clearly mentioned and also the parts covered under it. Warranty will be applicable from the date of successful installation.
12. Service Facility: Supplier must mention about the service set up in India & confirm effective after sales service.
13. BIT Mesra is not bound to accept the lowest or any quotation for whatsoever reason and reserve its right to accept or reject in whole or in part any or all the quotations received without assigning any reason.
14. Applicable taxes shall be quoted separately for all items and levies payable by the supplier under the contract shall be included in the unit price.
15. Each bidder shall submit only one quotation and sealed quotation to be submitted / delivered at the address. (Alternatively it can be email at [purchase.sanjay@bitmesra.ac.in](mailto:purchase@bitmesra.ac.in) or dr.purchase@bitmesra.ac.in) or deliver by hand.
16. Training clause ( if any )to be mentioned.
17. Delivery period should be mentioned clearly in the quotation.
18. Conditional tenders will not be considered.
19. Authorized dealership certificate should be submitted in case principal manufacturing company is not quoting directly.

Sd/-

Dy. Registrar Purchase

BIT Mesra Ranchi-835215

**ANNEXURE**

Development of Laboratory prototype of AC-DC Hybrid system

1.About the Panel:

A power system panel consisting of 3-Bus system where a motor generator set with thyristor/IGBT control (Both Prime mover armature and field control at dc motor and Generator excitation control) connected with bus -1, a 3.25 kWp SPV panel(available in lab) with DC-DC bi-directional buck-boost converter at Bus-2, and battery bank (available in lab) with DC-DC Bidirectional converter at Bus-3. The SLD of the system is given in Fig.1.

Two Interlinking Bidirectional converters will be connected between AC and DC Bus as shown Fig.1

**Panel Specification**

A laboratory prototype of a 3-phase system of rating 415 Volt AC line and 600 Volt DC line having a load of of 6 kW which comprises of both AC and DC loads with proper control facility. Other than providing the control platform to control the converters, the laboratory prototype will also be consisting of wired and wireless communication between server and field servers. The rating of the generator, line load etc is shown in Fig1.

1. ***Generation Station Model*:** The generators are rated 3 kVA, 415V, 50Hz synchronous machine coupled with a 5HP DC Shunt Motor. It should have an Automatic Voltage Regulator (AVR) so as to maintain an output voltage. The prime mover of the motor will be controlled by a Speed Controller provided by the manufacturer. A customized PIC/ARM/STM32 based embedded hardware is to be developed with a provision of flexibility in tunning of controller parameters. The generator output signal contains very less harmonic content.
2. ***Distribution Line Model*:** The distribution lines (3-Lines, as shown in Fig.1) are to be designed such that it has its own parameter as resistor for a DC line. The components are designed as such the DC line will have a capability of handling 20A, 500V, The power transferring capability of each line must be 2.5 kW.
3. ***Bus Model*:** The whole control concept will be developed on PIC/ARM/STM32 based embedded hardware with a customized Data Acquisition System (DAQ) based on ESP8266/ESP32//ARM-Cortex processor. The DAQ will connect to a Computer via serial interface will provide data logging facility.
4. ***Load Model***: The load comprises both AC as well as DC loads. One DC Shunt motor (2 HP, 220V,1500 RPM) along with resistive load (0 to 1000W,220V) and one induction motor (2 HP, 415V, 3 – phase) with step variable inductor (415V , 5A)
5. *Photovoltaic Panel*: One 3KW solar panel will be used in one bus which is available in lab.
6. *DC-DC Buck Boost converter* : As per the number and ratings given in Fig. 1.
7. *Interlinking Converter:* As per the number and ratings given in Fig. 1.
8. *Isolation Transformer:*  One 6KVA,415V Isolation Transformers is to be provided.
9. *Controllers:* PIC/ARM/STM32 based embedded hardware with a customized Data Acquisition System (DAQ) based on ESP8266/ESP32//ARM-Cortex controller is to be provided for Bidirectional Interlinking Converters and Buck Boost converters as shown in Fig. 1. MPPT controllers to be provided with SPV panel having an optional control.
10. *Wireless centralized control of the inverters:* IOT based data communication system for cloud server uplink and downlink is to be provided. Provision for running adaptive algorithm on cloud computational platform for ensuring maximum utilization of RES also to be provided.

