



**UNIVERSITY OF ALLAHABAD**  
**ALLAHABAD, UP, INDIA-211002**

**NOTICE INVITING TENDER**

No: **Re- Tender DST/FIST/Eddy\_Flux/01/2021**

**Date: 10.09.2021**

Dear Sirs,

**Sub: Tender for supply of “Eddy Covariance Flux Tower with Data Acquisition System”**

We intend to procure following equipment as per the given specifications from DST\_FIST grant sanctioned to K. Banerjee Centre of Atmospheric and Ocean Studies, University of Allahabad. Kindly, send your quotation under two bid system viz., **Technical Bid (Part-A) and Financial Bid (Part-B)** confirming to our terms and conditions.

<b>Item. No.</b>	<b>Description of the equipment(s)</b>
1	Eddy Covariance System Package
2	Flux Tower with Solar Panel and batteries

**Schedule of Invitation of Tender:**

<b>S. No.</b>	<b>Activity</b>	<b>Date / Remarks</b>
1.	Tender No.	<b>Re- Tender DST/FIST/Eddy_Flux/01/2021</b>
2.	Published Date	<b>10.09.2021</b>
3.	Bid Documents Download	<b>10.09.2021</b>
4.	Bid submission Start Date	<b>10.09.2021</b>
5.	Bid submission End Date	<b>30.09.2021 at 03:00PM</b>
6.	Technical Bid Opening Date & Time	<b>31/09/2021 at 04:00PM</b>
7.	Amount for submission of EMD in the form of DD,FDR, Banker Cheque or Bank Guarantee from any commercial bank in an acceptable form drawn in favour of “Finance Officer, University of Allahabad”	<b>Rs. 40,000/-</b>
8.	Address for communication	<b>Purchase Officer, University of Allahabad, Prayagraj, U.P. – 211002</b>

Intending tenderers are advised to visit again the CPP website <http://eprocure.gov.in/eprocure/app> at least 3(three) days prior to closing date of submission of tender for any corrigendum / addendum / amendment.

In case, any holiday is declared by the Government on the day of opening, the tenders will be opened on the next working day at the same time. The university reserves the right to accept or reject any or all of the tenders without assigning any reasons thereof.

**PURCHASE OFFICER**  
**UNIVERSITY OF ALLAHABAD**

**University of Allahabad**  
**Prayagraj, UP, INDIA-211002**

**Technical Bid (Part - A)**

1. **Submission of Tender:** Tenders should be submitted mandatorily online on CPP portal <https://eprocure.gov.in/eprocure/app>. The copy of tender document will be available on University website [www.allduniv.ac.in](http://www.allduniv.ac.in) also for information.
2. **Technical Bid (Part- A):** The bidder should submit the documents mentioned in the Technical Bid (Part-A) along with required documents as mentioned in *Annexure 'I'*.
3. **Signed Tender:** The tender documents submitted by the tenderer (applicant agency) including Annexure/Addendums if any, shall be submitted with duly filled and signed on each page as token of having read the conditions and acceptance thereof.
4. **Language of Tender:** The tender prepared by the tenderer and all correspondence and documents relating to the tender exchanged between the tenderer and the Employer shall be in the English and/ or Hindi language.
5. **Contents of Tender Document:** The tenderer is expected to examine carefully all the contents of the tender document including without limiting to eligibility criteria, terms & conditions and take them fully into account before submitting their offer. Failure to comply with the requirements as detailed in these documents shall be at the tenderer's risk.
6. Technical Bid is to be submitted in a sealed cover, super scribing supply of **“Eddy Covariance Flux Tower with Data Acquisition System”** in the proforma prescribed at **Annexure-I** and **Annexure -II** along with proof of entries.
7. **TECHNICAL SECTION: DETAILED ITEM SPECIFICATIONS**

**(A) Eddy Covariance System Package**

**GENERAL SPECIFICATIONS:**

A Eddy Covariance (EC) System capable of measuring fluxes of CO<sub>2</sub>, H<sub>2</sub>O, momentum and other turbulent quantities accurately should be provided. The EC system should be suitable for unattended long-term operation with low-power consumption. The system should be complete with all cables & connectors, interfaces, enclosures for the electronics and data acquisition system and mounting accessories to install on tall towers.

The system should provide error free measurements during foggy and light to moderate rainfall conditions. The EC system has to be installed at a 20 m height on a flux tower and access to data logging system using a laptop should be possible from the ground level.

The EC system should consist of:

**(a) A fast response Open Path CO<sub>2</sub>/H<sub>2</sub>O Gas Analyzer sensors with digital signal interface, carrying case, head mounting kits and User Manual**

- I. The open path infrared gas analyzer should provide high-frequency measurements of CO<sub>2</sub> and H<sub>2</sub>O mixing ratios; must be suitable for eddy covariance measurements and co-located setup with the sonic anemometer.
- II. Analyzer should have user programmable output rate in the range 1-20 Hz or higher.
- III. CO<sub>2</sub> calibration in the range 0 to 1000 ppm or higher and H<sub>2</sub>O in the range 0 to 60 mmol/mol. or higher
- IV. CO<sub>2</sub> performance: 'Zero' drift with temperature should be within:  $\pm 0.3$  ppm/ $^{\circ}\text{C}$  ; Gain Drift with temperature should be within:  $\pm 0.1\%$  of reading/ $^{\circ}\text{C}$
- V. H<sub>2</sub>O performance: Zero Drift with Temperature:  $\pm 0.05$  mmol/mol/ $^{\circ}\text{C}$ ; Gain Drift with temperature (maximum):  $\pm 0.3\%$  of reading/ $^{\circ}\text{C}$
- VI. Should have digital as well as analog outputs and compatible with most data loggers for independent data collection; Communication should be possible through RS232/ USB/ Ethernet.
- VII. Calibration sheets, user manuals, calibration fixtures, standard accessories including basic spare kit with air filters, desiccants, and scrubbers should be included.
- VIII. Should have low-power consumption.
- IX. Should be able to continuously operate during foggy and rainy conditions without loss of data.
- X. In addition to the wiring to EC data acquisition system, necessary power and data cables (of length 25 m, Qty. 01 nos.) should also be provided to independently connect the analyzer to the datalogger and computer.

**(b) A three-dimensional Ultrasonic Anemometer-Thermometer (digital), head mounting kit and carrying case**

- I. The sensor should provide high frequency measurements of three-dimensional wind (u, v and w) components and sonic air temperature.
- II. Should have programmable output rates in the range 1 - 30 Hz or better.
- III. Wind speed measurements should have a range of 0 to 30 m s<sup>-1</sup> or better, with a resolution of 0.01 ms<sup>-1</sup> and an accuracy < 1 % rms.
- IV. Wind direction should be in the range 0 – 359°, with a resolution of 0.1° and accuracy 0.5°.
- V. Sonic temperature measurements should have a range – 40 °C to + 60 °C, with a resolution of at least 0.02 °C.
- VI. The sensor should have an RS232/USB communication link.

- VII. Operating environment: Should provide optimum performance for temperature in the range of  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ , relative humidity up to 100 %; should also provide error free measurements during light to moderate rainfall conditions.
- VIII. In addition to the wiring to EC data acquisition system, necessary power and data cables (of length 25 m, Qty. 01 nos.) should also be provided to independently connect the sonic anemometer to other data loggers and computer.
- IX. The 3-D anemometer and  $\text{CO}_2\text{-H}_2\text{O}$  gas analyzer could be two separate units or it can be an integrated single unit.

**(c) A data acquisition system (with data logger, Qty. 01 No.)**

The data acquisition system should be capable of controlling measurements, perform high-frequency data collection and storage. The data acquisition system can be a part of the gas analyzer/ sonic anemometer instruments with appropriate signal processing electronics and storage or a programmable datalogger connected externally.

- I. Should have enough storage capacity to store data for one month at 10 Hz sampling rate.
- II. Communication to the data acquisition system should be possible through RS232 or USB port and there should be provision for Ethernet connectivity. Necessary software for system configuration and data collection also should be provided.
- III. System should include Ethernet as well as wireless connectivity through mobile network for data transfer.
- IV. Should be suitable for analog, digital, rs232, SDI-12, resistance and thermocouple temperature measurements. Analog to digital conversion should be of at least 16-bit resolution. Resolution should be of the order of few tens of microvolts and accuracy should be within 2 % of the reading.
- V. Sampling should be possible at a rate of 1 Hz or better and should have the option to output data at user desired time intervals (1 sec to 1 day).
- VI. Should have battery-backed system RAM to ensure that data, programs, and time are maintained while the data logger is disconnected from power source.
- VII. Should be capable of providing current and voltage excitation and switched and continuous voltage outputs.
- VIII. Should have appropriate ports to interface storage modules as necessary and module should have capability to store large amount of data, of the order of few Giga bytes.
- IX. Should have provisions for connections to PC using RS232/ USB
- X. Suitable modem and accessories for accessing dataloggers and transfer data through Ethernet as well as mobile network should be provided.
- XI. Should have provisions to add peripherals such as multiplexers, relay drivers, serial and pulse input expansion modules, control output expansion module etc. in order to expand the datalogger's measurement and control capabilities.
- XII. Suitable modem and accessories should be provided to remotely access the dataloggers using mobile network for data transfer.

**(d) In addition to the above instruments, the following equipments should also be provided:**

- I. 24 V Power distribution box (Qty. 01 nos.)
- II. Combined Analyzer and Anemometer mounting kit (Qty. 01 nos.)
- III. Standard Crossover fitting (Nurail) (Qty. 02 nos.)
- IV. Crossbar kit (Qty. 01 nos.)
- V. Ethernet Adapter (Qty. 02 nos.)
- VI. DC/DC Backup Battery/Charge Controller (Qty. 01 nos.)
- VII. A weather resistant enclosure (Qty. 01 nos.)
- VIII. Documentation: Operation & Service manuals in duplicate: full documentation of all components should be provided in English. The documentation should include functional description, maintenance procedure and troubleshooting, diagrams of electrical and electronic circuits of the components in duplicate.
- IX. Installation and training: The installation of the whole system should be executed by the bidder. The Contracting authority will provide substantial help and all local conditions for the installation provided all the inputs related to technical specifications for the same is furnished along with the technical bid by the bidder. Training should be included that will occur in the final place of the equipment, after final tests. The installation and commissioning should be carried out at a suitable site in Allahabad by the firm's engineers. Special utility requirements should be informed well in advance for necessary site preparation.
- X. All sensors and data logging systems should be of high research standards and widely used by scientific community.
- XI. Packing and Handling, Customs Duty, inland Freight charges: Charges for packing and handling, including inland freight charges and shipping are to be clearly mentioned by the bidder. In addition, necessary Customs clearance for foreign equipments is to be performed by the bidder and relevant Customs Duty (for foreign equipments) against Duty exemption documents, Custom Clearance and Delivery Charges are to be paid by the firm and duly mentioned in the commercial bid.
- XII. Guarantee/Warranty: The complete system must be guaranteed for free repair/replacement for a minimum period of three year from the date of satisfactory installation and acceptance. Software upgradation, if any, has to be incorporated free of cost during the warranty period. Period of warranty and AMC provided by the vendor should also be mentioned.
- XIII. The itemized details of the equipment and its components must contain the technical specifications (and their itemized prices in financial bid) to be able to compare, contrast and select as per the project objectives.

**Important: Please provide a compliance statement of the specifications along with the quotation by responding to each and every specification detailed as per above.**

## **(B) Flux Tower with Solar Panel and Batteries**

### **General Specifications:**

A 20m mounting Flux Tower with necessary accessories (frames and fixtures on the ground) is required to be installed at the site by the vendor. In addition to that, the following are also to be provided by the vendor:

- A **Solar panel** module (about 400W) with Charge Controller and 150AH SMF Batteries is also required
- Making and on-site installation of adequate frames and fixtures on the ground, installation of Solar panel and other accessories are to be done by the vendor.

**Important: Please provide a compliance statement of the specifications along with the quotation by responding to each and every specification detailed as per above.**

8. **Please feel free to contact Coordinator, K. Banerjee of Atmospheric and Ocean Studies, University of Allahabad for any query or concern regarding technical specification of the equipments.**
9. Financial Bid is to be submitted in another sealed cover, super scribing supply of **“Eddy Covariance Flux Tower with Data Acquisition System”** in the pro-forma prescribed at **Annexure-III**.

### **GENERAL TERMS AND CONDITION**

10. **Earnest Money:** An earnest money of Rs. 40,000/- (Rs. Forty thousand only) has to be enclosed along with the Technical Bid (Part-A). The Earnest Money deposit shall be only in the form of DD, FDR, Banker Cheque or Bank Guarantee in favour of the **Finance Officer, University of Allahabad, payable at Prayagraj**. No Cheques/ Cash shall be accepted as EMD. No interest on security deposit and EMD shall be paid by the University of Allahabad. For successful bidder this amount will be kept as security deposit. **Agency/Firm/Company registered with NSIC/MSME will be given benefit as per rules.**
11. The bidders should give full details of being the manufacturer or sole distributor or reseller of the items with documentary evidence/authorization letter.
12. The single quotation may be considered if the item is a Proprietary Item and Proprietary item certificate is submitted by the bidder. The bidder should submit at least three purchase orders in education institutes of India and abroad for the supply of same item in case of Proprietary item.
13. The bidders should have at least five years experience in the field.
14. Company's/Firm's profile, legal registrations and income tax clearance certificate should be submitted with the tender documents.
15. The bidders must not have a criminal record and an affidavit to this effect must be

- submitted by the bidder along with tender document.
16. Certificates/documents showing the satisfactory performance of the orders and after sale service status of at least three education institutes of India and abroad must be submitted by the bidder.
  17. Along with tender documents, list of major clients with value of orders and actual date of completion may also be submitted.
  18. Bidders will affix monogram of the firm on each item of the furniture at the time of supply.
  19. **Evaluation of Bid**: The technical evaluation of the bid will be done by a committee constituted by Honorable Vice Chancellor.
    - a. Financial Bids of only those bidders would be opened who qualify in technical evaluation.
    - b. Opening of Financial Bid (Part-B) will be intimated to technically qualified tenderers after scrutiny of Technical part through CPP portal.

**Note 1:** The Honorable Vice Chancellor of the University reserves the right to annul all bids without assigning any reason

**Note 2:** Overwriting or erasing in the bid documents shall render the same invalid. If unavoidable, all cuttings/over writings should be attested by the authorized signatory.

**Note 3:** The bids must contain the information as required in the format prescribed. The bids which do not contain the information as desired and are not supported by necessary documents will not be considered for evaluation.
  20. While submitting the quotation following should invariably be mentioned:
    - a) Name of the manufacturer of the item quoted along with brand name, if any.
    - b) Details of specifications and lowest rate F.O.R. destination. And Discount, if any.
    - e) GST at concessional rate as applicable to the Educational Institutions if any.
    - f) Period of validity.
    - g) Firm delivery time from the date of receipt of confirmed order, condition of supply and terms of payment.
  21. Please fill in and return the Suppliers Profile Form & Mandate Form.
  22. The quotations shall be sent only by speed post/courier only to the Purchase Officer, University of Allahabad, Prayagraj-211002, UP, INDIA.
  23. The tender number along with **tender for supply of “Eddy Covariance Flux Tower with Data Acquisition System” should be mentioned on the top of envelop failing which the tender will be not be opened.**
  24. Terms & Conditions as applicable are attached. Under No Circumstances unsealed quotation and by hand will be entertained in the office.

25. Quotations received after the due date shall not be considered.
26. All suits shall be in the courts of Prayagraj Jurisdiction only.



**Technical Bid (Part-A)**

S. N.	Particulars	Response
1.	Name of the Bidder	
2.	Postal Address	
3.	Address of the factory Site (if original manufacturer)	
4.	Telephone/Mobile No.	
5.	Owner/Authorized representative's name, address and phone number	
6.	Year from which the bidder is in this business :	
7.	Turnover during last three years (Documentary evidence must be attached) Financial Year 2016-17 Financial Year 2017-18 Financial Year 2018-19	
8.	PAN Number	
9.	GST Number	
10.	Whether ISO certified (please give number)	
11.	Name of the issuing Bank along with No. & Date of the D.D. of Rs. 1,00,000/- as cost of EMD tender document attached.	
12.	Whether the bidder has been black-listed by any Government Organization.	

**Declaration**

I \_\_\_\_\_, hereby, certify that information given above are true to the best of my knowledge, and in any case/time, it is found to be incorrect, I will be debarred by the University.

Dated :

**Signature of the bidder**

**[Forming part of the Technical Bid (PART-A)]****Specification of the goods**

<b>S.No.</b>	<b>Description of the Items</b>	<b>Requirement (in Units)</b>
1.	Eddy Covariance System Package having detailed technical specification as mentioned in the technical section (clause 7) of the bid document	<b>01 (ONE)</b>
2.	Flux Tower with Solar Panel and batteries having detailed technical specification as mentioned in the technical section (clause 7) of the bid document	<b>01 (ONE)</b>

**Note:**

- 1. Please refer to clause 7 of the tender document for complete technical specification of all the products.**
- 2. Any deviation in the product offered by the bidder with respect to technical specification as mentioned in the tender document must be specifically mentioned.**

**Signature of the bidder**

**Financial Bid (PART-B)**

S. N.	Specifications	Quantity	Total Cost Inclusive of all taxes, duties, levies, freight, insurance, loading & unloading charges. (Rs.)
1.	Eddy Covariance System Package having detailed technical specification as mentioned in the technical section (clause 7) of the bid document	<b>01 (ONE)</b>	
2.	Flux Tower with Solar Panel and batteries having detailed technical specification as mentioned in the technical section (clause 7) of the bid document	<b>01 (ONE)</b>	

**Note:**

- 1. Please refer to clause 7 of the tender document for complete technical specification of all the products.**
- 2. Any deviation in the product offered by the bidder with respect to technical specification as mentioned in the tender document must be specifically mentioned.**

**Signature of the bidder**

## Mandate Form

### PFMS/Electronic Clearing Service/(RTGS) Facility for Receiving Payments

#### **Details of Account Holder:**

1.	Firm/Contractor/Agency	
2.	Name of Accounts Holder	
3.	Complete Address	
3.	Contact No.	
4.	E-mail	

#### **Bank Account Details:**

1.	Name of the Bank	
2.	Branch Code with IFSC code and address	
3.	Contact number and E-mail of Bank Branch	
4.	Whether the Branch is RTGS enabled? If yes, then what is the Branch's IFSC Code?	
5.	Is the Branch also NEFT enabled	
6.	Type of Bank Account (SB/Current/Cash Credit)	
7.	MICR Code of Bank	
8.	Complete Bank Account Number	
9.	Repeat Bank Account Number	

Authorized signatory of the Firm

Date:

Bank Stamp

Signature of Branch Manager

Name:

Contact No.