

INDIAN INSTITUTE OF TECHNOLOGY GOA

At Goa Engineering College Campus

Farmagudi, Ponda, Goa 403401

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GSTIN: 30AABAI1653D1ZF

PAN: AABAI1653D

TAN: BLRI08261B

Enquiry No: IITGOA/2019-20/043

Date: 10/12/2019

IIT Goa invites sealed quotations in two bid form for the supply of below mentioned item.

Sl. No.	Description of Item	Qty
1	Dual Rotor Aerodynamical System (Detailed Specifications Attached)	01 No.

Terms and conditions:

1. Quotation must be valid for at least 90 days.
2. The GSTIN should invariably be mentioned in your offer.
3. Kindly attach a compliance certificate along with the technical quote.
4. Prices:
 - I) **For Import Supplies:**
 - a) It is mandatory to quote prices in FOB basis only.
 - b) In case of multiple options of same product, bidders are requested to quote only one best option and not multiple options.
 - c) Payment terms: 90% payment by letter of credit and balance 10% will be paid by wire transfer after satisfactory installation and commissioning.
 - II) **For Indigenous Supplies:**
 - a) In case of multiple options of same product, bidders are requested to quote only one best option and not multiple options.
 - b) Payment terms: Within 30 days after the delivery and installation of the item at IIT GOA.
5. Delivery and installation should be made within 6 weeks of getting a confirmed order.
6. The Bidder must be an Original Equipment Manufacturer (OEM) or his Authorized Dealer/Authorized Distributor/ Authorized Stockist/ Channel Partner having a Direct Purchase and Support agreement with the OEM. In case, if the Bidder is a Dealer/Distributor, a valid LETTER OF AUTHORIZATION from the Original Equipment Manufacturer for Dealership should be produced.

7. The Average Annual Turnover of the Bidder for the last three years should be at least Rs.25 lacs. (Rupees Twenty-Five lacs). A Printed copy of the Annual Accounts duly audited and certified by the Chartered Accountants must be enclosed with the technical bid.
8. The Bidder should provide a list of 6 customers of previous supply of a similar/ same range of equipment to IIT's / NIT's / Universities with contact details. Copies of orders received from the reputed firms on bidding firm need to be submitted.
9. The Bidder should furnish Minimum 4 satisfactory performance certificate from the parties concerned to whom supplies were affected in case such supplies were made.
10. The Successful bidder shall provide Min 1 Years warranty after the completion of installation.
11. The bidder should produce the Certificate of Incorporation of the organization.
12. Certificate/Undertaking on the letterhead of the Company to the effect that the bidder/ Manufacturer had not been blacklisted anywhere in India or abroad by any organization.
13. The bidder should have ISO 9000 or equivalent certification.
14. The suppliers shall provide the banking details along with their quote on their letterhead duly signed and stamped.
15. Quotations shall be submitted in two parts;
 - 1) **Part – I (Technical)** should contain all the technical details and specification of the product. It should contain unpriced bid along with terms and conditions, compliance certificates, proprietary certificates (if applicable), any other certificates/details etc. This envelope should be marked as “Technical Bid”
 - 2) **Part -II (Financial)** The financial bid of the above item should be in a sealed envelope marked as “Financial Bid” and should contain financial terms and conditions.
16. IIT Goa reserves the right to accept or reject any or all the bids without assigning any reason in public interest.
17. For any clarification, you may kindly contact Dr. Sheron Figarado (E-mail: sheron@iitgoa.ac.in and Stores & Purchase Department (email: purchase@iitgoa.ac.in) till 20/12/2019.
18. All sealed quotations must reach to the Assistant Registrar (Stores & Purchase), IIT Goa, at Goa College of Engineering Campus, Farmagudi, Ponda, Goa, 403 401 by 17.00 Hrs on or before 31/12/2019.

Sd/-
Asst. Registrar (S&P)

Technical Specifications:

Scope of experiments

The Two Rotor Aerodynamical System/ trainer is a laboratory set-up designed for control experiments for emulating the behaviour of a helicopter. This is a high order nonlinear system with significant cross-couplings. The trainer should consist of a beam pivoted on its base in such a way that it can rotate freely both in the horizontal and vertical planes. At both ends of the beam there should be rotors (the main and tail ones/ tandem rotors) driven by DC or AC motors and a counterbalance arm with a weight at its end should be fixed to the beam at the pivot.

Expected features and specifications

- The experiment should be reconfigurable for multiple aerospace systems, such as 1 DOF and 2 DOF helicopter.
- Integrated data acquisition (DAQ) device and suitable sensors and amplifiers.
- Yaw angle range : 360°
- Elevation angle range : 120° ($\pm 60^\circ$ from horizontal)
- Pitch encoder resolution (in quadrature) : 512 counts/revolution or better
- Yaw resolution (in quadrature) : 512 counts/revolution
- Tri-axis gyroscope range : better than ± 200 dps
- Tri-axis accelerometer range : $\pm 2g$ or better
- Real-time control interface software, Fully compatible with MATLAB®/Simulink®
- Software interface should allow user defined controllers ranging from classical controller to modern controllers, defined through the Simulink environment.
- PC connectivity: USB 2.0 or higher
- OS compatibility: Windows 10.
- Fully documentation for system model and parameters should be available for MATLAB®/Simulink® to enable comparative study by simulation and experiment.
- Device weight should be less than 15kg
- Table top with cubic volume not exceeding 3,00,000 cm³ with highest dimension not exceeding 80cm.
- Software tools (excluding MATLAB Simulink and modules supplied by MATLAB for real-time control), Library files, model files, and experiment manuals and other user manuals should be supplied along with the experimental set up quoted.
- Software configurable sampling time for studying the digital control aspects.
- Installation and demo at the designated lab is to be arranged.

Desirable features:

- Hardware and Software interface should support networking mode to allow the set up to be configured as a remote laboratory experimental set-up.
- Ability to interface controllers with MATLAB GUIs, LabVIEW panels, Java GUIs, C/C++ etc.
- Support of TCP/IP, UDP, serial, shared memory, named pipes, SPI, I2C, CAN, ARCNET and other protocols.