Department of Aerospace Engineering
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Prof. P. SRIRAM
Head of the Department

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REF.NO. ASE/Tender/18-19/PS&HSN/UAV **Dated: 04/02/2019**

Due date: 28/02/2019

Dear Sir,

1. Quotations are invited in duplicate for the various items **shown below**/overleaf/enclosed list.
2. The quotations are to be **in two parts** as:
   Technical Offer and as Commercial offer
   The two parts of the offer are to be clearly marked on the envelopes. The two parts of the offer in separate envelopes must be enclosed in the one bigger envelope duly sealed and super scribed with reference number and due date and must be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The quotations duly sealed and super scribed on the envelope with reference no. and due date, should be addressed to the undersigned so as to reach him on or before the **due date** stipulated above.
4. Quotations should be valid for 60 days from the due date and period of delivery be indicated.
5. Local firms to quote for free delivery to this Institute. If quoted for Ex-Godown delivery charges are indicated separately.
6. Relevant literature pertaining to the items quoted with full specifications.
7. Sales Tax/General Taxes/ED if applicable and such other taxes legally legible and intended to be claimed should be distinctly shown along with the price quoted. If this is not indicated no such claim will be admitted at any stage. The taxes legible should take into consideration that we are entitled to have concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession is given. Sales Tax Certificate will be issued at the time of final settlement of the bill.
8. Goods should be supplied carriage paid and insured.
9. Goods shall not be supplied without an official supply order.
10. Every effort will be made to make payment within 30 days from the date of bill/acceptance of goods whichever is later.
11. The Guarantee period of the item may be indicated clearly.
12. In case of LC. Payment 90% of the payment will be made after completion of the supply. The balance 10% of the payment will be made after satisfactory installation of the equipment.
13. IIT Madras is exempt from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. IIT Madras will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges.
14. **Acceptance and Rejection**- I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or rejects it in full without assigning any reason.
15. **Fax and Email quotations are not acceptable.**

Yours faithfully,

-/Sd
Head of the Department
Aerospace Engineering Department
IIT Madras, Chennai 600036.

Items required: <u>Model UAV Airframe-Engine assembly with servos for display purposes (1 Nos.)</u> as per the specifications enclosed

Specifications of the Model UAV Airframe-Engine assembly with servos for display purposes

UAV airframe-engine assembly with servos should be an actual demonstrated high-performance airframe that could be used as part of a UAV so that the students are exposed to a rigorously designed airframe that could be used in professional surveillance applications.

Airframe should be made from modular composite structures. It should be modular such that no component is more than 1.25m. It should have quick release fasteners to remove payload bay and top fuselage covers to enable quick access and fast assembly/ disassembly. It should be sealed against rain.

Sl. No.	Item/ specification	Range/ Type/ Description
1	Empty weight excluding fuel and payload (airframe with landing gear + engine + engine mount + servos + batteries for servos)	Less than or equal to 10kg
2	Maximum Take off weight that the airframe-engine assembly is designed for.	More than 21kg
3	Fixed wing configuration with high-wing.	Wing aspect ratio > 13
4	Wing should be removable and modular (3 pieces) so that maximum dimension of each modular piece is less than 1.2m.	
5	Wing should have separate flaps and ailerons.	
6	Digital servos with aluminum servo mounts for wing and tail plane	
7	Push-pull industrial connectors between the center and the tip wing sections as well as wing and the tail-boom	
8	Conventional, aft, inverted V-tail with 4 servo/ surface elevators for redundancy	
9	Tail booms	Carbon Fiber
10	Engine type	2 stroke piston engine (IC) with onboard 80W generator
11	Engine configuration	Pusher with propeller and vibration dampening mount
12	Fiber glass fuel tank with a built in fuel foam to prevent sloshing: located close to overall center of gravity	At least 7.5L capacity
13	Payload bay location	Front (ahead of landing gear, close to nose)
14	Payload mount	Swappable
15	Heavy duty landing gear for rough terrain: High shock absorbing capacity, inflatable wheels	Tri-cycle configuration
16	Steerable suspension nose landing gear with servo	
17	Heated Pitot probe	

Identical airframe-engine assembly with servos should have been used as part of a UAV with the following demonstrated capabilities:

Sl. No.	Item/ specification	Range/ Type/ Description
I	Endurance	At least 20 hours
II	Maximum payload weight	At least 10kg
III	Service ceiling	5km
IV	Design cruise speed	Less than 80 kmph
V	Stall speed with high lift systems	Less than 50 kmph
VI	Maximum level speed	More than 125 kmph
VII	Runway launch capability	Yes, take-off run less than 35m

It should be possible to integrate the airframe-engine assembly with an autopilot, communication devices and a ground control station at a later stage to convert it to a full-fledged operational UAV with above capabilities.

Additional Requirements:

A1. Vendors should provide continuous technical support and maintenance of the equipment.

A2. Vendors have to provide warranty for a minimum of one year. If the waiting period for repair during warranty exceeds more than 15 days then the warranty period shall be extended by the amount of days taken for repair.

A3. Vendors must have sufficient experience in supplying equipment to other reputed academic institutions and organizations for research purpose. They must provide references of end users whom we can contact for their experience with the supplied equipment. Experience of the end users will also be used as a criterion for the selection of bids that meet technical requirements.

A4. Vendors must provide proof for the capabilities listed above with respect to the UAV that uses identical airframe-engine assembly with servos. The UAV should have been certified to be flight-worthy by FAA/ CEMILACS.

A5. Vendors must provide detailed documentation for the equipment, including all the flight parameters/ characteristics. They should include a design certificate to prove their ownership of the design. Documentation should also include operating and maintenance manuals.

A6. Vendors must provide training to our technical staff for using the equipment.

A7. All the expenses for installation, training and post sales technical support will be borne by the vendor.

A8. All the items should come in appropriate portable containers.

-/Sd
Head of the Department
Aerospace Engineering Department