

INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR

Ground Floor, Block "A", Vishwakarma Government Engineering College Campus
Visat-Gandhinagar Highway, Chandkheda, Ahmedabad-382424. Tel/Fax No. +91 79 2397 2583

Website: www.iitgn.ac.in

Date: 6th June, 2013

Tender No.: IITGN/EE/EQP/2013-14/0061

Last date: 26th June, 2013 on/before 05:00 PM

SUB: Invitation of sealed tender for Supply of (1) "Power Electronic Drive and Motor Set up for Induction Motor, DC Shunt, BLDC Motor and PMAC Motors" (2) Power Electronic Drive and Motor set up for Switched Reluctance Motor" as per details and specifications mentioned in the Annexure-I for IIT Gandhinagar.

Dear Sir/Madam,

Indian Institute of Technology Gandhinagar invites sealed tender for **Supply of (1) "Power Electronic Drive and Motor Set up for Induction Motor, DC Shunt, BLDC Motor and PMAC Motors" (2) Power Electronic Drive and Motor set up for Switched Reluctance Motor" as per details and specifications mentioned in the Annexure-I** for IIT Gandhinagar on the following terms & conditions:

1. If the supplier/firm is manufacturer/authorized dealer/sole distributor of any item, the Certificate to this effect should be attached.
2. The tender documents are to be in two parts as **Technical Offer and as Financial offer:**
 - a.) The Technical offer should include the detailed specifications of main equipment/item and its accessories. All items should be numbered as numbered in the **Annexure-I**.
 - b.) The financial offer should include the cost of main equipment/item and its accessories numbered as in (a). If there is any separate cost for installation etc. that should be quoted separately. The total cost should be quoted in words as well as figures (typed or printed). Amendment should be avoided. Amendments, if any, should be duly initialed, failing which the offers are liable to be rejected.
 - c.) The two parts of the offer should be placed in separate sealed envelopes clearly marked **"Technical Offer" & "Financial Offer"**. These two envelopes along with envelope for EMD and Tender Fee marked **"Tender Fee & EMD"** (total three envelopes) must be enclosed in one bigger envelope duly sealed and super scribed with tender number, name of the instrument/item and tender due date must be forwarded to the undersigned so as to reach him on or before the due date.
 - d.) The Financial Offer must be mentioned in the prescribed format as per the Annexure-II only. If the financial offer is not in the prescribed format, it will be rejected.

Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

3. Fax and Email quotation are not acceptable.

4. Quotations should be valid for **120 days** from the tender due date. The quotation should

clearly indicate the period of delivery, warranty terms etc. A minimum of one year warranty is required from the date of commissioning.

5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. The Suppliers should submit copies of suitable documents in support of their reputation, credentials and past performance.

6. The quotations should be given for the items in the same order as in the tender document.

7. The quantity shown against each item is approximate and may vary as per demand of the Institute at the time of placing order.

8. 100% payment will be released after completion of the supply and successful installation.

9. IIT Gandhinagar is exempted from payment of Excise Duty. Necessary certificate will be issued on demand.

10. In the event of any dispute or difference(s) between the vendee IIT Gandhinagar and the vendor(s) arising out of non-supply of material or supplies not found according to the specifications or any other cause whatsoever relating to the supply or purchase order before or after the supply has been executed, shall be referred to the concerned authority of IIT Gandhinagar who may decide the matter himself or may appoint arbitrator(s) under the arbitration and conciliation Act 1996. The decision of the arbitrator shall be final and binding on both the parties.

11. The place of arbitration and the language to be used in arbitral proceedings shall be decided by the arbitrator.

12. All disputes shall be subject to Gandhinagar Jurisdiction only.

13. IIT Gandhinagar reserves the rights to accept/reject any offer in full or in part or accept any offer other than the lowest offer without assigning any reason thereof. Any offer containing incorrect and incomplete information shall be liable for rejection.

14. The Tender/Bid will be open on **27.06.2013 at 05:00 PM at IIT Gandhinagar Premises.**

- a.) The suppliers or their authorized representative may also be present during the opening of the Technical offer, if they desire so, at their own expenses.
- b) Only those financial offers will be opened whose technical offers are found suitable by the expert committee appointed for the concerned instrument..
- c) No separate information shall be given to individual bidders. In incomparable situation, the committee may negotiate price with the qualified bidder quoting the lowest price before awarding the offer.
- d) The Tender Committee reserves its right to select or reject any or all of the Items/equipment mentioned above without assigning any reasons.

15. In case the supplier requires any elucidation regarding the tender documents, they are requested to contact to the Assistant Registrar (M.M.) through e-mail, purchase@iitgn.ac.in on or before **4:00 PM, 26.06.2013**.

16. A demand draft of **Rs. 500/- (Rupees Five Hundred Only)** towards non-refundable tender fee and a demand draft of **Rs. 17,000/- (Rupees Seventeen Thousand Hundred Only)** at the rate of 2% of the tender value towards refundable EMD from a **Nationalized bank/Schedule Bank** in favour of **“IIT Gandhinagar Main Account”** payable at Ahmedabad placed in a separate envelope marked **“Tender Fee & EMD”** should accompany tender bid documents. Both the demand drafts should be valid for 90 days. Without the Tender Fee and EMD the bid will not be considered.

The EMD of the successful bidder will be returned to them without any interest after completing the successful installation. The earnest money of unsuccessful bidders will be returned to them without any interest within thirty (30) working days after awarding the offer.

17. All tender documents should have to be forwarded through speed post or registered post, courier to the following address so as to reach the following address on/before **05:00PM, 26.06.2013**.

Assistant Registrar (M.M.)

Indian Institute of Technology Gandhinagar,
Vishwakarma Government Engineering College Campus,
Ground Floor, Block "A",
Visat-Gandhinagar Highway, Chandkheda
Ahmedabad 382424
Tele/ Fax No. +91 79 2397 2583

Other Terms & Conditions:

1. Pre – Qualification Criteria:

a. Bidders should be the manufacturer / authorized dealer. Letter of Authorization from Manufacturer on the same and specific to the tender should be enclosed.

b. An undertaking from the original Manufacturer is required stating that they would facilitate the bidder on a regular basis with technology/product updates and extend support for the warranty as well.

2. **Delivery:** The Equipment should be delivered and installed within the period as specified in the purchase order and be ready for use within one week of delivery unless otherwise prescribed.

3. **Penalty:** If the suppliers fails to deliver and place any or all the Equipment or perform the service by the specified date, penalty at the rate of 1% per week of the total order value subject to the maximum of 10% of total order value will be deducted.

4. **Training:** Suppliers need to provide adequate training at IIT Gandhinagar to the nominated person of IIT Gandhinagar at their cost. IIT Gandhinagar will not bear any training or living expenditure in this regard.

5. **Installation & Warranty Declaration:** Suppliers must give the comprehensive onsite warranty as required from the date of successful installation of Equipment against any manufacturing defects. In the installation report the model number of instrument and all spares parts numbers should be in the line of purchase order. And suppliers must be written in the warranty declaration that “everything to be supplied by us hereunder shall be free from all defects and faults in material, workmanship and shall be of the highest quality and material of the type ordered, shall be in full conformity with the specification and shall be complete enough to carry out the experiments, as specified in the tender document.”

Any deviation in the material and the specifications from the accepted terms may liable to be rejected and the suppliers need to supply all the goods in the specified form to the satisfaction / specifications specified in the Purchase order and demonstrate at the their own cost.

Sd/-

Assistant Registrar (M.M)

FORM A

PARTICULARS TO BE FILLED BY THE SUPPLIER

1. Name of the Supplier:
2. Complete Address of the Supplier:
3. Availability for demonstration of instruments at IIT Gandhinagar: Yes / No [Please ✓]
4. Cost of the Tender enclosed: Yes/No [Please ✓] If yes,
 - a.) Name of the Bank _____
 - b.) Amount (₹) _____
 - c.) Demand Draft No. _____
5. Earnest Money Deposit enclosed: Yes / No [Please ✓] if Yes,
 - a.) Name of the Bank _____
 - b.) Amount (₹) _____
 - c.) Demand Draft No. _____
 - d.) Last Validity date of the enclosed DD _____
6. Communication details of the concerned contact person to whom all references shall be made regarding this tender enquiry. [NOTE: Any changes after submission of Tender documents kindly update IIT Gandhinagar]
 - a.) Full Name :
 - b.) Complete Postal Address:
 - c.) Telephone No.:
 - d.) Fax No.:
 - e.) Mobile No.:
 - f.) E-mail:
 - g.) Website Address:

FORM B

PARTICULARS FOR REFUND OF EMD TO SUCCESSFUL/UNSUCCESSFUL BIDDER

RTGS/National Electronic Fund Transfer (NEFT) Mandate Form

1	Name of the Bidder	
2	Permanent Account No (PAN)	
3	Particulars of Bank Account	
	a) Name of the Bank	
	b) Name of the Branch	
	c) Branch Code	
	d) Address	
	e) City Name	
	f) Telephone No	
	g) NEFT/IFSC Code	
	h) RTGS Code	
	i) 9 Digit MICR Code appearing on the cheque book	
	j) Type of Account	
	k) Account No	
4.	Email id of the Bidder	

ANNEXURE-I

Name of Item/Equipment: -

- (1) Power Electronic Drive and Motor Set Up for Induction Motor, DC Shunt, BLDC Motor and PMAC Motors

Technical Specifications :-

Motor Controller

- FPGA based Xilinx3SD1800A-FG676 FPGA /TMS320F28335 based DSP Controller / Piccolo Based DSP Controller (Model: Micro - 28069) or an equivalent controller
- Memory of at least 16MB SDRAM
- Serial ,parallel , USB data interface ports
- Min of 24 PWM outputs
- Capture inputs (High speed)
- Digital I/O's
- Analog I/O's
- Other support hardware and tools, necessary on the controller

Intelligent power Module (IPM)

- Power Module should be capable for Motor Control Applications upto 2 kW by using the 3rd generation IGBT and Diode Technology
- Input 1phase/3 Phase 50 Hz AC
- Output 400V/10 A (Max) on each leg of three phase bridge
- Current sensors to sense the DC link current and output current of the Inverter Bridge
- Voltage sensor to sense DC Link voltage
- Isolated PWM signals
- Necessary Protection circuits
- Isolated Fault signal from the IPM.
- Display or meters to indicate voltage and currents.

Motors set up 1HP 3ph Induction Motor (Spring Balance Load Setup)

This set up should consists of one number of (1) Three phase AC motor 415V,50 Hz, (2) mechanical Spring balance load set-up(3) Proximity or equivalent sensor for speed sensing

1HP DC Shunt Motor (Spring Balance Load Setup)

This set up should consists of one number of (1) DC shunt motor 180V, 5A, Field 220V, 0.3 A(2) mechanical spring (3)Balance load set-up(4) Proximity or equivalent Sensor for speed sensing

BLDC Motor with load set up

- Rated Power: 1HP (min)
- Rated DC voltage : 300V -320V
- Phase: 3 ϕ
- Rotor pole: 4 Poles
- Position Sensor: 3 No's of Hall Sensor Mounted with 120 electrical degree apart
- Shaft encoder: for motor position control (A ,B and Index pulse)

PMSM Motor with load set up

- Rated Voltage: 220 VAC

- Power: 1HP
- Position Feedback: (A, B and index Pulse)
- 3Nos.of hall Sensors placed with 120 Electrical degrees apart
- Rotor pole: 4 Poles
- Phase: 3φ

2. Power Electronic Drive and Motor set up for Switched Reluctance Motor

Technical Specifications :-

Motor Controller

- FPGA based Xilinx 3SD1800A-FG676 FPGA / TMS320F28335 based DSP Controller / Piccolo Based DSP Controller (Model: Micro - 28069) or an equivalent controller
- Memory of at least 16MB SDRAM
- Serial ,parallel , USB data interface ports
- Min of 24 PWM outputs
- Capture inputs (High speed)
- Digital I/O's
- Analog I/O's
- Other support hardware and tools, necessary on the controller

SRM Power Module (IGBT Based)

- The power module should be designed for Four Phase Switched reluctance Motor speed control application up to 1 hp ratings by using the latest SR-IPM. Any external PWM controller (like DSP, Micro controller, FPGA controller) can be interfaced with this power module for SR-Motor open / closed loop speed control Application.

Specifications

- IGBT-power module with heat sink and snubber Circuit-forms Split-DC link power circuit for SR motor control
- High-speed opto Isolation for all IGBT - PWM isolation.
- AC-DC conversion for power circuit
- Current sensor with signal conditioning circuit- Provided for output and DC input current measurement.
- SR-position-sensor signal conditioning circuit
- Speed sensor circuit provided for closed loop Operation
- Over-current trip circuit with indicator & reset switch for Protection
- Connector provision in the front panel for SR-motor Power input and position feed backs.
- Test points in front panel for PWM and current waveform observation
- Cabinet with front panel interface.
- Display or meters to indicate voltage and currents.

SR Motor - Eddy Current Load Setup

- Input Voltage: 380V pulsed DC
- Type : Switched Reluctance Motor
- Power: 1HP
- No of Phase / Pole: 4Φ, 8/6 pole
- Typical Speed range : No load / Full Load, 3700 / 2800 rpm
- Rotor Position sensor
- Loading arrangement - eddy current load set up or equivalent load set up.
- Torque Sensor

Quote must have a compliance report on all the above points.

Annexure – II

FINANCIAL OFFER

FOR INDIGINEOUS SUPPLIES

Ref No. and Date: -

Tender No. : -

Due Date: -

Description of item: -

Sr. No	Description of Item & Specification (Model no if any)	Qty. in Units	Unit Price in Rs.	Discount (%)	Excise Duty /Custom Duty (%)	CST/VAT (%)	Octroi (%)	Total Price in Rs.
Total Amount in Rs. :-								

- Delivery Mode : Delivery at IIT Gandhinagar, at site only
- Total bid price should be inclusive of all taxes and levies, transport, loading, unloading etc.
- Delivery Period:days.
- Quotation Validity Date: - Minimum 120 Days from the date of Submission of quotation/tender.
- Payment Term: Payment within 30 working days from the date of submission clear of bill with acceptance certificate from the concerned dept./Sect./MMD.

Sign of bidder: - _____

Date: - _____

Name of the bidder:- _____

Firm's Name:- _____