

**Department of Electrical Engineering
Indian Institute of Technology Delhi
Hauz Khas New Delhi 110016**

Notice Inviting Quotations

20-11-2014

Sub: Purchase of Direct Drive Torque Motor and Drive

Indian Institute of Technology Delhi invites sealed tender offers in two bid format (Technical bid and Commercial bid) from eligible and experienced OEM (Original Equipment Manufacturer) OR OEM Authorized Dealer for supply, installation & integration of **Direct Drive Torque Motor and Drive**, with three years on site comprehensive warranty from the date of receipt of the material as per terms & conditions specified in the tender document.

The quotation should reach Dr. Shubhendu Bhasin, II-215 Control Lab, Dept. of Electrical Engineering, IIT Delhi, Hauz Khas, New Delhi – 110016 latest by 5:00 P.M. on 05/12/2014.

Technical Specifications

Direct Drive Torque Motor:

1. Permanent Magnet Synchronous Motor
2. Supply Voltage: 230 V AC
3. Peak Torque: > 40 Nm
4. Continuous Torque: > 15 Nm
5. Weight: < 20 kg
6. Maximum RPM: ≥ 300
7. Maximum Moment Load: >150 Nm
8. Maximum Axial Tension: >300 N
9. Maximum Axial Compression: > 3000 N
10. Rotor Inertia: < 0.015 kg-m²
11. Mounting type: Face mount

Motor Encoder:

12. Type: Sine Encoder
13. Resolution: >10,00,00,000 counts/rev
14. Repeatability: < 1 arc/sec
15. Accuracy: $\pm < 30$ arc/sec

Servo Drive:

16. Rated supply voltage: 120 V to 240 V \pm 10% AC
17. Continuous output current: 6-10 A
18. Peak output current: 15-20 A
19. Enable input required
20. Fault Output required
21. Programmable Digital Inputs: >5
22. Programmable Digital outputs: \geq 1
23. Field bus Support: CAN & EtherCAT
24. Service port: TCP / IP
25. Encoder Emulation Required
26. Analog Control: \pm 10 V
27. Operating Mode: Torque, Velocity and Position

Accessories

28. Braking Resistor
29. Cables and connectors: cable lengths > 5 m

Terms & Conditions: In addition to the general terms and conditions for purchase as stipulated by IIT Delhi, the following should be agreed to by the supplier:

- **Due date:** The tender has to be submitted before the due date. The offers received after the due date and time will not be considered.
- **Preparation of Bids:** The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial bid should indicate item wise price for the items mentioned in the technical bid. The Technical bid and the financial bid should be put in separate covers and sealed. Both the sealed covers should be put into a bigger cover and to be sealed. The tender number and details should be superscripted on the left side of the outer cover. The Quotations should be valid for 120 days from the due date. The Quotations duly sealed and superscripted on the envelope with the reference No. and due date, should be addressed to **Dr. Shubhendu Bhasin, II-215 Control Lab, Dept. of Electrical Engineering, IIT Delhi, Hauz Khas, New Delhi – 110016** so as to reach on or before the due date.
- **Compliance:** A compliance statement of specifications must be enclosed along with the technical bid. This has to be in the form of a table (A template for this table is given at the end of this NIQ). Rows of the table must correspond to the technical specifications listed above (in exactly the same order). Against each row in the next column, it must be stated what the exact specifications of the quoted item are. The following column should clearly state whether the quoted item is compliant or not (Indicate either a "Yes" or a "No"). This answer must be justified in another column, with a reference stating the location (page number/ paragraph number/ line number) in official brochure or other technical literature. Remarks, if any may be required, can be stated in another column. This statement must be officially signed. Absence of such a statement or ambiguous/ incorrect/ inconsistent information provided will result in automatic disqualification of the quote from the purchase process.

- **Prices:** The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of taxes & duties shall be clearly indicated. The price should be quoted without custom duty and excise duty, since IIT Delhi is exempted from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand.
In case of import supply the price should be quoted on FOB Basis only.
- **Payment** will be made on the basis of an invoice after delivery and satisfactory installation.
- **Warranty:** Three years comprehensive on-site warranty (Parts and labour) required. Extended warranty may be quoted separately.
- Indicate if a special **discount/ rebate**, wherever admissible, is provided in view of the fact that the supplies are being purchased for academic purposes in a Public Institution of national importance.
- If the items quoted are **proprietary** in nature, please enclose proprietary certificate from the principals stating "Certified that ----- is a proprietary item of M/s and no other manufacturer makes these items".
- **Delivery** of the goods and installation should be made within a maximum of 8 weeks from the date of placement of purchase order.
- Complete set of **manuals** for the operation of the equipment should be given. All circuit diagrams, other mechanical and electrical schematics must be provided to main unit, sub systems and accessories.
- The equipment should be delivered and installed by the supplier as part of the supply process in the Department of Electrical Engineering, IIT Delhi.
- In case of service related orders the vendor authorizes IIT Delhi to deduct the service tax at prevalent rates while releasing payment.
- If the quote is being submitted by the representative of the Principals/ manufacturers themselves, a valid **Agency ship/ Dealership Certificate** authorizing the agent to quote to IIT Delhi on behalf of Principals should be enclosed.
- If the bidder is Indian agent, the agency certificate should be enclosed.
- **The Institute/Purchase Committee has the right to accept/reject any/all bid/quotations without assigning any reasons whatsoever.**

Technical Compliant Sheet

S. No.	Technical Spec	Exact Spec of quoted item	Compliant (Yes/no)	Reference	Remarks
	Direct Drive Torque Motor				
1	Permanent Magnet Synchronous Motor				
2	Supply Voltage: 230 V AC				
3	Peak Torque: > 40 Nm				
4	Continuous Torque: > 15 Nm				
5	Weight: < 20 kg				
6	Maximum RPM: >= 300				
7	Maximum Moment Load: >150 Nm				
8	Maximum Axial Tension: >300 N				
9	Maximum Axial Compression: > 3000 N				
10	Rotor Inertia: <0.015 kg-m ²				
11	Mounting type: Face mount				
	Motor Encoder				
12	Type: Sine Encoder				
13	Resolution: >10,00,00,000 counts/rev				
14	Repeatability: < 1 arc/sec				
15	Accuracy: ± <30 arc/sec				
	Servo Drive				
16	Rated supply voltage: 120 V to 240 V ±10% AC				
17	Continuous output current: 6-10 A				
18	Peak output current: 15-20 A				
19	Enable input required				
20	Fault Output required				
21	Programmable Digital Inputs: >5				
22	Programmable Digital outputs: >=1				
23	Field bus Support: CAN & EtherCAT				
24	Service port: TCP / IP				
25	Encoder Emulation Required				

26	Analog Control: +/- 10 V				
27	Operating Mode: Torque, Velocity and Position				
	Accessories				
28	Braking Resistor				
29	Cables and Connectors: Length >5 m				