

# NATIONAL INSTITUTE OF TECHNOLOGY

## TIRUCHIRAPPALLI – 15

### Department of Production Engineering

Web : [www.nitt.edu](http://www.nitt.edu)

Phone : 0431 - 2503515



# TENDER DOCUMENT

Tender Notification No.: NITT/R&C/FIST/PROD/KPS/CMS/2010-11/6

Dated: 18.6.2010

- Name of the component : **COMPREHENSIVE MECHATRONICS SYSTEM**
- Quantity required : **One Number**
- EMD Amount : **Rs. 10,000/- (Rupees Ten Thousand Only)**
- Delivery : Within four weeks from the date of purchase order
- Last Date of submission of Tender : 20.7.2010 upto 3.00 p.m.
- Address for submission of Tender : The Director  
National Institute of Technology  
Tiruchirappalli-620 015  
Tamil Nadu, India.  
**With kind attention to: Dr. P. Asokan**  
**Head of the Department/ Production Engg.**
- Date of opening of technical bid : **20.7.2010 at 3:30PM**



**NATIONAL INSTITUTE OF TECHNOLOGY  
TIRUCHIRAPPALLI – 15**

**Department of Production Engineering**

Tender Notification No.: NITT/R&C/FIST/PROD/KPS/CMS/2010-11/6

Dated: 18.6.2010

**NOTICE INVITING TENDER**

The National Institute of Technology, Tiruchirappalli (NITT) is an autonomous body under MHRD, GOI, imparting Technical Education and engaged in Research Activities. It is proposed to procure the following component for the departmental academic/research activities.

Sealed Quotations under **two cover system** are invited for the following component subject to the following terms and conditions, from the reputed manufacturers or their authorized dealers so as to reach this office on or before scheduled date and time. The technical cover will be opened on the same day in the presence of bidders or their authorized agents who may choose to be present.

Name of the component : **COMPREHENSIVE MECHATRONICS SYSTEM**

Quantity required : One Number

EMD : Rs. 10,000/- (Rupees Ten Thousand Only)

Time for completion of supply after placing purchase order : Four weeks

Last Date of submission of Tender : 20.7.2010 upto 3.00 p.m.

Tender to be submitted at the following address: The Director  
National Institute of Technology  
Tiruchirappalli-620 015  
Tamil Nadu, India.  
**With kind attention to: Dr. P. Asokan  
Head of the Department/ Production Engg.**

***Place, Date and time of opening of technical bid:***

**Date: 20.7.2010    Time: 3:30 PM    Venue: Head's Room, Dept. of Production Engineering.**

**Note :** The Institute shall not be responsible for any postal delay about non-receipt / non delivery of the bids or due to wrong addressee.

## **SECTION : 1 INSTRUCTION TO BIDDER**

1. The bidder should give details of their technical soundness and provide list of customers of previous supply of similar items to Universities, Institutes or Government Departments/Undertakings/public sectors with contact details. The details of the agency/profile should be furnished along with the copy of all related documents.

### **1.1 Bids are to be submitted under two cover system.**

#### **Cover 1:**

#### **Cover 1 should contain the following:**

- a. ***EMD by Demand Draft drawn on any scheduled bank in favour of "The Director, NIT, Trichy" payable at Trichy should be submitted. EMD shall bear no interest. Any bid not accompanying with EMD is liable to be treated as non-responsive and rejected.***
- b. ***Technical pamphlets***
- c. ***Detailed technical specification***
- d. ***The agency should furnish copy of license certificate for manufacture/supply of the item.***
- e. ***The agency should furnish Income Tax PAN number***
- f. ***Warranty period offered for the tendered item to be specified. If the warranty period is not conforming with the schedule of requirements given in section 3 of the document, the bid is liable to be treated as non-responsive and rejected.***
- g. ***Duly filled up technical questionnaire, if any***
- h. ***Duly filled up deviation schedules to technical specification***
- i. ***Copy of supply orders completed during the last three years ending 31-12-2009.***
- j. ***If the prices are revealed in the cover 1, the offer will be summarily rejected***

- 1.2 ***The cover 1 shall be superscribed as 'Technical cover' duly indicating the Tender reference No. and the due date of opening.***

### **1.3 Cover 2:**

#### **Cover 2 should contain the following**

***Cover 2 shall contain Price only and shall be superscribed as 'Price Cover' duly indicating the Tender Reference No. and the due date of opening.***

***Each Cover shall be sent in a double sealed cover. The inner covers (Cover 1 and Cover 2) should be sealed individually with the sellers's distinctive seal and superscribed with the tender reference no. and due date of opening. Both the inner covers shall be placed in a common outer cover which shall also be sealed with seller's distinctive seal and superscribed with the tender reference no. and due date of opening.***

***Mention "Kind Attention: Dr. P. Asokan, Head of the Department, Department of Production Engg." and submit at the address given in the Notice Inviting Tender.***

***Cover 1 will be opened on the scheduled date and time mentioned in the tender enquiry. Cover 2 of the technically and commercially suitable offers alone will be opened on a date which will be intimated to the qualified bidders.***

2. The agencies should submit their rate as per the format given in Section 4 of the Notice Inviting Tender in this cover. Rate should be quoted in Indian Rupee. The rate should be quoted both in

words and figures. All the pages of the bid should be signed affixing the seal. All corrections and overwriting should be initialed.

3. The tender will be acceptable only from the manufacturers or its authorized supplier.
4. The bid shall be in the format of price schedule given in Section 4. The contract form as per format given in section 5 shall be submitted. Incomplete or conditional tender will be rejected.
5. Details of quantity and the specifications are mentioned in Section 3 appended to this Notice Inviting Tender.
6. The item to be used is strictly according to the specification and subject to test by the Institute/concerned authorities. It must be delivered and installed in good working condition.
7. The Institute reserves the right to cancel or reduce the quantity included in the schedule of requirements at any time after acceptance of the tender with a notice. The Contractor/Supplier shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the work/supply in full but he did not derive in consequence of the foreclosure of the whole or part of the works.
8. Performance Security of 5% of the contract value in terms of Bank guarantee by scheduled banks shall be given by the successful bidder for the total period of warranty.
9. **Release of EMD:** The EMD shall be released after receipt of performance security from successful bidder.
10. **Validity of bids:** The rate quote should be valid for a minimum of 90 days. No claim for escalation of rate will be considered after opening the Tender.
11. **Imports:** In case, goods are to be imported, the Indian agent should furnish authorization certificate by the principles abroad for submission of the bid in response to this Notice Inviting Tender.
12. **Clarification of Tender Document:** A prospective bidder requiring any clarification of the Tender document may communicate to the contact person given in this notice inviting tender.
13. **Amendment of tender document:** At any time prior to the last date of receipt of bids, Institute may for any reason, whether at its own initiative or in response to a clarification requested by prospective bidder, modify the Tender document by an amendment.
14. ***The Institute may at its own discretion extend the last date for the receipt of bids.***
15. The bids shall be written in English language and any information printed in other language shall be accompanied by an English translation, in which case for the purpose of interpretation of the bid, the English translation shall govern.
16. The Institute reserves the right of accepting any bid other than the lowest or even rejecting all the bids without assigning any reasons. The decision of the Institute Purchase Committee is final in all matters of tender and purchase.
17. The bidder should give the following declaration while submitting the Tender.

**DECLARATION**

I/we have not tampered/modified the tender forms in any manner. In case, if the same is found to be tampered/modified, I/we understand that my/our tender will be summarily rejected and full Earnest Money Deposit (EMD) will be forfeited and I/we am/are liable to be banned from doing business with NIT, Trichy and /or prosecuted.

**Signature of the Bidder** : .....

**Name and Designation** : .....

**Business Address** : .....  
.....  
.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**

18. Any other details required may be obtained from the contact person given in the notice inviting tender during the office hours.

## SECTION : 2 CONDITIONS OF CONTRACT

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1. The rates should be quoted in Indian Rupee FOR NIT, Trichy for supply within India.
2. In case of import both CIF and / or FOB rate should be quoted. All components of expenditure to arrive at Chennai need to be explicitly specified.
3. The bidder shall indicate the excise duty exemption for the goods if applicable
4. The Institute is eligible for customs duty and excise duty exemption.
5. The rate quoted should be on unit basis. Taxes and other charges should be quoted separately, considering exemptions if any.
6. Rate quoted should be inclusive of Testing, commissioning and installation of equipment and training.
7. **Payment** : No advance payment will be made. Payment will be made only after the supply of the item in good and satisfactory condition and receipt of performance security by supplier. In case of imports, the payment will be made through LC after installation and performance security need to be submitted at the time of LC commitment.
8. Guarantee and Warrantee period should be specified for the complete period conforming to the section 3 of this tender document.
9. Period required for the supply and installation of item should be specified conforming to the section 3 of this tender document.
10. In case of dispute, the matter will be subject to Tiruchirappalli, Tamil Nadu Jurisdiction only.

## SECTION : 3 SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS

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Name of the Component to be procured : **COMPREHENSIVE MECHATRONICS SYSTEM**  
Specifications : **As per Annexure**  
Quantity : **1 No.**

### **Warranty: 3 Years on Site comprehensive Warranty**

Quantity : One built in box with parts specified in technical  
speciation along with accessories

Any other details/requirement : The specification provided is minimum requirement

Warranty period required : 3 Years On Site Comprehensive Warranty

Delivery schedule expected after  
release of purchase order (in weeks) : 4-6 weeks

EMD (in Rupees) : Rs. 10,000/- (Rupees Ten thousand Only)

Performance Security to be given by  
Successful bidder after release of  
purchase order (in Rupees) : 5% of the equipment cost

**SECTION : 4 PRICE SCHEDULE**

[ To be used by the bidder for submission of the bid ]

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- 1. Component Name :
- 2. Specifications (confirming to Section 3 of Tender document-enclose additional sheets if necessary) :
- 3. Currency and Unit Price :
- 4. Quantity :
- 5. Item cost (Sl.No.3 & Sl.No.4) (in Indian Rupee) :
- 6. Taxes and other charges :
  - (i) Specify the type of taxes and duties in percentages and also in figures
  - (ii) Specify other charges in figures
- 7. Warranty period (confirming to the Section 3 of Tender document. This should be mentioned in Technical bid also in order to get qualified for Financial bid) :
- 8. Delivery Schedule (confirming to the Section 3 of Tender document) :
- 9. Name and address of the firm for placing purchase order :
- 10. Name and address of Indian authorized agent (in case of imports only) :

**Signature of the Bidder** : .....

**Name and Designation** : .....

**Business Address** : .....

.....

.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**



**SECTION : 5 CONTRACT FORM**

[ To be provided by the bidder in the business letter head ]

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1. {Name of the Supplier's Firm) hereby abide to deliver the .....by the delivery schedule mentioned in the Section 3 tender document for supply of the items if the purchase order is awarded.
2. The item will be supplied conforming to the specifications stated in the tender document without any defect and deviations.
3. Warranty will be given for the period mentioned in the tender document and service will be rendered to the satisfaction of NIT, Trichy during this period.

**Signature of the Bidder** : .....

**Name and Designation** : .....

**Business Address** : .....  
.....  
.....

**Place :**

**Date :**

**Seal of the Bidder's Firm**

## COMPREHENSIVE MECHATRONICS SYSTEM

### Scope

**Supply, erection and commissioning of comprehensive mechatronics system as per specification below:**

**Purpose:** For Engineering College Laboratory – To conduct experiments on fundamental mechatronics system.

### PART-A

#### Qualifying Criteria:

The vendor should have supplied and commissioned similar capacity laboratory mechatronics system and it should be in working condition for minimum One year.

Vendor to attach the reference P.O. copies with specification of such supplies made with customer address and contact phone nos. for our verification. Performance certificates from the customers shall be added along with offer. NITT have all the rights to verify the performance of the equipments supplied from the customers.

For the following technical specification, vendor should give point to point confirmation, with a clear mention about the deviation if any. Also complete technical catalogue should be attached along with offer. Without the above details, the **offer will not be considered** for evaluation.

### PART-B

#### Specification:

1. The mechatronics system kit shall be of sleek design and portable one with wheels.
2. Provided with standard steel / Aluminium based mounting board (modular type) with all trainer kits so as to make the mounting of components easier.

3. All the products to be provided with suitable quick disconnect couplings.
4. All the components used shall be of reputed make acceptable to NITT. Vendor to specify the make with catalogue.
5. The following experiments should be possible to carry out using the kit:
  - a) To learn about the fundamentals of mechatronics system with components (I/O Terminals, Cable Clips, Profile plate connectors, Station Link receiver, Start up valve with filter regulator, CP Valve terminal, Stack Magazine module, Changer module, Light barrier module, Vacuum switch module, Tubing, cable binders, cable end sleeves, Power supply, Trolley, Control console, PLC board, PLC Programming cable, Work piece set, Simulation box, I/O Data cable, PLC programming software, Mechartonics Assistant (network licence), CIROS mechatronics simulation soft ware, Text book PLC's, Accessories, etc.,)
  - b) To build a mechatronics system circuit for applications to train the student with above components.
6. Vendor to provide the learning resources – basics of mechatronics system, Different mechatronics system experiments (minimum 10 experiments) and components for it. Vendor to provide the list of experiments with components required along with offer.
7. Operation & maintenance manual to be supplied - 2 hard copies and 1 soft copy with the equipments.

**Scope of supply:**

Vendor to supply the following items (minimum):

1. Aluminuim profile plate:
  - a. Height: 32 mm
  - b. Grid spacing (from slot to slot): 50 mm
2. Electrical mounting system: Comprising: 2 cable ducts 340 mm and DIN rail 340mm, with mounting accessories for securing to profile plate.

3.I/O Terminals:

4.Cable Clips:

5.Profile plate connectors: Length: 45 mm, Mounting method: Bolt with rotating head and M6 hammer-head nut

6.Station Link receiver:

7.Start up valve with filter regulator: Type: Sintered filter with water trap, piston regulating valve, Standard nominal flow rate: 750 lpm, Input pressure: max. 1600 kPa (16 bar), Working pressure: max. 1200 kPa (12 bar), Grade of filtration: 40  $\mu$ m, Condensate quantity: 14 cm<sup>3</sup>, Connector: G 1/8, QS-6, for plastic tubing PUN 6 x 1, Input pressure: 1000 kPa (10 bar), operating pressure: 600 kPa (6 bar), differential pressure: 100 kPa (1 bar).

8.CP Valve terminal: Grid dimension: 14mm

a. Type of actuation: Electrical

b. Manual override: resetting

9. Stack Magazine module: Height: 280 mm, Width: 60 mm and Length: 290 mm

10. Changer module: Cylinder rotation angle (rotary cylinder): 180° (freely selectable), Height: 130 mm, Width: 130 mm, Length: 250 mm .

11. Light barrier module: Nominal switching distance: 80 mm, Power supply: 24 V DC, Switch output: PNP, normally open/normally closed contact, Connection cable: 4-pin.

12. Vacuum switch module: Mechanical vacuum switch (pneumatic-electric pressure transduction) with 1 adjustable switching point and switching status display (LED).

13. Tubing, cable binders, cable end sleeves: Set of tubes, cable, cable binders and sleeves

14. Power supply: Input voltage :230/115 V AC (47 – 63 Hz), Output voltage: 24 V DC, short-circuit-proof , Output current: Maximum 4.5 A Connection cable: 1.3 m , Dimensions: 115 x 155 x 200 mm

15. Mechanical elements (sample pieces to study the function) like  
a) Ball screw, b) LM guides with bearings, c) Encoder, etc.

16. Trolley: Height (incl. castors, to bottom edge of profile plate): 750 mm, Width: 350 mm , Depth: 700 mm
17. Control console:
18. PLC board: • Power supply: 24 V DC , Digital inputs: 32, of which 2 are fast counters (max. 2 kHz), Outputs: 16 (24 V DC, max. 400 mA), SysLink interfaces: 1 x cable for connection to station, 1 x cable for connection to console, 1 x strap for connection to EMERGENCY-STOP, Serial interfaces: 1 x RS232 programming interface, 1 x universal, Ethernet interfaces: 1 x TCP/IP, 10 Mbit/s
19. PLC Programming cable: To connect PLC to PC, PC to FEC – FC – 20- FST (RS 232)
20. Work piece set: External diameter: 40 mm, Height(black): 22.5 mm , Height (red and aluminium): 25 mm
21. Simulation box: Simulation of inputs for testing of aPLC program.
22. I/O Data cable: Sys-link-cable, length 2.5 m, for Digital Training Studio for connection of EduTrainer or I/O-terminal, with additional I/O-terminal or simulation box.
23. PLC programming software
24. Mechartonics Assistant (network licence)
25. CIROS mechatronics simulation soft ware
26. Guarantee: One year from the date of commissioning the equipment. You should undertake to repair or replace free of charge the defective parts due to faulty design or bad workmanship during the period of one year from the date of commissioning of the equipment. Delivery of replacement or repaired parts must be effected free of charge.
27. Vendor to inform NITT about the readiness of the equipment for inspection at vendor's works before dispatch. Vendor to arrange for prove out of the system with all the experiments identified at vendor's works during inspection free of cost.
28. Vendor to carry out the erection and commissioning of the equipment at NITT and provide training for minimum 3 persons at NITT, free of cost.

29. Vendor to provide the following documents along with offer for technical evaluation:

- a. Reference P.O. copies with specification.
- b. Performance certificates from the customers.
- c. Photograph / CD of the mechatronics kits supplied earlier.
- d. List of Experiments suggested with mechatronics along with list of components used.
- e. Make of each components used.