

# NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

DEPARTMENT OF MECHANICAL ENGINEERING

POST SRINIVASNAGAR, MANGALORE – 575 025 (D K)

A DEEMED UNIVERSITY

Phone: (0824) 2474000.

Fax: (0824) 2474033

E- mail: [info@nitk.ac.in](mailto:info@nitk.ac.in)

Website: <http://www.nitk.ac.in>



## NOTICE INVITING QUOTATION

Notification. No: NITK/MECH/FIST2016/EQRFDM/1/2020-21/04

dated: 23/04/2021

<b>Name of Goods</b>	<b>FDM set up to the existing Robot for Robotic 3D printing</b> a) 3D printing head b) Extruder c) Interfacing cable set d) Filament holder e) Mounting Assemblies f) Installation & commissioning
<b>Estimated Amount:</b>	Rs- 2,45,000 (Including GST)
<b>Time for Supply of item after release of Purchase order</b>	<b>21 (Days)</b>
<b>Document Download / Sale Start Date</b>	23-04-2021 5 PM
<b>Clarification Start Date</b>	23-04-2021 5PM
<b>Clarification End Date</b>	30-04-2021 5PM
<b>Bid Submission Start Date</b>	23-04-2021 5 PM
<b>Last Date for submission of bids</b>	10-05-2021 <b>before 3.00 PM</b>
<b>Bid Opening Date</b>	10-05-2021 4PM
<b>Address for Submission of bids [ Type Address of the Department and Contact Person Details with Phone Number]</b>	The Head of the Department Department of Mechanical Engineering National Institute of Technology Karnataka Surathkal, Post Srinivasnagar, Dakshina Kannada Mangalore – 575 025 Contact Persons: Prof. Vijay Desai, (Ph: +919449332960) Dr. Navin Karanth P, (Ph: +919449058052



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**NOTICE INVITING QUOTATION (NIQ)**

The National Institute of Technology Karnataka, Surathkal (in short – NITK, Surathkal) is an Institute Of National Importance Under Ministry of Education Govt of India, imparting Technical Education and engaged in Research Activities. It is proposed to procure the items for the departmental academic/research activities.

Sealed Quotations as per the Price Schedule given in this NIQ are invited for the following items subject to the terms and conditions, from the reputed manufacturers or its authorised dealers so as to reach on or before scheduled date and time. The quotations in the firm's Business letter head should be address to the "Director, NITK, Surathkal". The envelope shall be superscribed with the Quotation Notification Number and the Name of the Goods for which quotation is submitted.

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Sd/-  
HOD

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

**SECTION-1**  
**Terms and Conditions**

1. The rates should be quoted for preferably FOR destination from supply within India.
2. The bidder shall indicate the excise duty exemption for the goods if applicable.
3. The rate quoted should be on unit basis. Taxes and other charges should be quoted separately, considering exemptions if any. The rate should be quoted in INR only
4. Rate quoted should be inclusive of Testing, commissioning and Installation of equipment and Training.
5. 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.
6. Guarantee/Warranty period should be specified for the complete period should be specified in section 3 of this tender document.
7. Period requirement for the supply and installation of item should be specified in section 3 of this tender document.
8. In case of dispute, the matter will be subject to Mangalore Jurisdiction only.

**SECTION-2**  
**SCHEDULE OF REQUIREMENTS, SPECIFICATIONS AND ALLIED DETAILS**

[ To be filled up by the Department / Centre of NITK, Surathkal ]

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Item(s) Name to be Procured	: FDM set up to the existing robot for robotic 3D printing a) 3D printing head b) Extruder c) Interfacing cable set d) Filament holder e) Mounting Assemblies f) Installation & commissioning
Brief Specifications of the Item(s) (Attach Additional Sheet if necessary)	: Sheet attached
Quantity	: 01
Any other details / requirement	:
Warranty Period required	: 01 year
Delivery Schedule expected after placement of Purchase order (in Weeks)	: 21 days

**SECTION 3**  
**PRICE SCHEDULE**

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

- 
1. Item Name :
  2. Specifications  
(Conforming to Schedule of requirements  
Enclose additional sheets if necessary) :
  3. Currency and Unit Price :
  4. Quantity :
  5. Item Cost (Sl No. 3 \* Sl. No. 4 ) :
  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** :  
**(Conforming to the Schedule of  
requirements)**
  8. Delivery Schedule :  
(Conforming to the Schedule of requirements)
  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 4**  
**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 by the delivery schedule mentioned in this document for supply of the items if the purchase order is awarded.
2. The item will be supplied conforming to the specifications stated in this document without any defect and deviations.
3. Warranty will be given for the period mentioned in this document and service will be rendered to the satisfaction of NITK, Surathkal during this period.

**Signature of the Bidder:** \_\_\_\_\_

**Name** : \_\_\_\_\_

**Business Address** : \_\_\_\_\_

\_\_\_\_\_

**Place :**

**Seal of the Bidder's Firm**

**Date :**

# Specifications:

## FDM set up to the existing KUKA Robot for Robotic 3D printing

A Fused deposition Modeling (FDM) set up is required to the existing KUKA robot for 3D printing application, the specifications of the FDM set up required and the robot in the laboratory are mentioned below.

### Robot specification:

Technical specifications of the existing KUKA robotic system at automation laboratory purchased under the same project

### Robot technical specification:

Model	KR 10 R1420
Maximum Reach	1420 mm
Rated payload	10 Kg
Pose repeatability (ISO 9283)	$\pm 0.04$ mm
Number of axis	6
Foot print	333.5 mm x 307 mm
Weight	Approx. 160 Kg

### Controller specification: (KUKA KRC4- Small size-2)

Dimensions (H x W x D)	615 x 580 x 540mm
Processor	Multi-core technology
Hard drive	SSD
Interface	USB3.0, GbE, DVI-D, Display Port
Number of axes (max.)	6 + 6 (with add. axis box)
Mains frequency	50/60Hz $\pm$ 1Hz
Rated supply voltage	AC 3 x 208 V to 3 x 575 V
w/o transformer	AC 3 x 380/400/440/480 V
Protection rating	IP54
Ambient temperature	+5 °C to +45 °C
Weight	60kg

KUKA system software version KSS 8.3

### FDM setup:

Specification of the FDM set up required for the robot mentioned above

#### a) 3D print head

A 3d printing head (yoke) is required to fix the extruder and nozzle to the robot's flange.

#### b) Extruder

- Should be a consistent, reliable extruder

- Should offer excellent print quality
- Easy to change filaments
- High- torque stepping motor
- Extrude 1.75 mm filament
- Easy to change tip
- Should service temperatures up to 250° C.
- 0.5 mm standard nozzle, should be compatible to use 0.35 mm, 0.4, 0.75mm, 1.00 mm
- Should be compatible to print in multi directions.
- Material compatibility: ABS, HIPS, NYLON, PET, PETT, PLA, PP

**c) Interfacing cable set**

Interfacing cable set is required to make connection between 3d printing control boards, extruder, etc, for FDM process.

**d) Filament holder**

A filament holder or bobbin should be mounted on Axis -3 of the robot to carry a filament (1.75 mm diameter) of 1 Kg

**e) Mounting assemblies**

Provide all mounting assemblies to fix FDM process onto the robot

**f) Installation and commissioning**

A technical person's visit to automation laboratory at mechanical engineering department is required for installation and commissioning support