

Tender notification for the procurement of a gantry-type “concrete 3D printer” (additive manufacturing)

Last date of submission: 21 September 2021

Kindly send your best quotation for a “gantry-type concrete 3D printer” with the technical specifications/general compliance mentioned below.

Quote should come only from **Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor**. The quotations should be on FOR-IISc Bangalore basis in INR only.

How to submit: The tenderer should submit the technical and financial bids separately in sealed envelopes superscribing the envelopes as ‘Technical bid’ and ‘Financial bid’. Both these envelopes must be put into a single envelope, superscribed ‘TENDER FOR: CONCRETE 3D PRINTER’. This should reach the following address by 4 PM on 21 September 2021.

Attn: Dr. Souradeep Gupta
Centre for Sustainable Technologies
Indian Institute of Science,
Bengaluru, Karnataka - 560 012
Contact: +91(80)2293 2447

A clear compliance statement giving brochures or other details as necessary to show compliance with technical specifications given below is required along with the technical bid.

Technical specifications for the gantry-type concrete 3D printer

The printer should be able to extrude and print cement-based materials, including ordinary Portland cement, blended cement, soil-cement combinations and cementitious mixtures with micro-fibres (1 – 9 mm in length). The printer should be able to print mixtures with solid particles of size of up to 9 mm with both spherical and angular shapes (for example, sand and lightweight aggregates). If appropriate accessories are needed to achieve these specifications, please include in the tendered quotation.

General:

1. The system must come with necessary safety features, software systems and friendly interface(s) for complex modelling and editing.
2. The tenderer is required to carry out full testing and demonstration of the printer’s performance at Indian Institute of Science, along with training the representative(s) from the institute on the printing/software systems after delivery.
3. The tenderer has a track record of supplying similar equipment to other organizations, preferably in India. Relevant documents including user testimonial on product performance/maintenance shall be furnished.
4. The validity of the quotation shall be at least 12 weeks.

Technical specifications:

1. **Build volume:** 1800 mm x 1800 mm x 1500 mm
2. **Frame structure:** Stiff and robust steel structure
3. **Software systems:** User-friendly interface to allow modelling of complex geometries and necessary editing, including but not restricted to, slicing, adjustment of layer dimensions/ resolutions etc should be provided. The software must alert users of any error and convey information such as printing time, material consumption etc. The software system shall also provide single point / integrated control of printer components.
4. **Connectivity:** Wi-fi, USB and memory-card
5. **Nozzle specifications: Shape:** Circular, oval, rectangular, and square shapes are to be provided. The nozzle diameters for circular shape should be of 20 mm, 25 mm, 30 mm, 35 mm and 40 mm. For non-circular shapes, the width should range from 20 to 50 mm.
6. **Nozzle control:** Vertical and tangential control of the nozzle should be provided.
7. Two different **head systems**, including hopper with screw extruder (up to 18 kg material holding capacity), and extrusion hose with nozzle. The head systems can be swapped as necessary with relative ease.
8. A modular enclosure of transparent material for the print area, to mitigate effect of environmental factors on the printed samples is to be provided. The enclosure can be mounted or demounted easily.
9. Printing speed should be adjustable in the range of 50 – 200 mm/sec.
10. Computer with UPS system (30 minutes) back up to be provided with the printer

Delivery/Installation/Warranty:

1. The tenderer is responsible for safe transport, proper installation and demonstration of the machine operation/printing at the Indian Institute of Science. Centre for Sustainable technologies will provide the space and electrical connections for installation of the machine.
2. Three years complete warranty from the date of installation for all parts of the concrete 3D printer.
3. Any issue arising during the warranty period shall be attended by the tenderer within a lead time of 3 days. It would be highly desired that issues are resolved within 7 days during the warranty duration.

The above-mentioned specifications are highly desirable. However, lower technical specifications may be considered if the above-mentioned specifications are found to be unsuitable in financial terms. The Institute reserves the right to go for lower specifications taking into considerations its financial constraints and technical preferences.

Any communications in this regard shall be sent to

Centre for Sustainable Technologies, Email: office.cst@iisc.ac.in with a copy marked to Dr. Souradeep Gupta, Email: souradeep@iisc.ac.in