7 Dec 2016

Enquiry number: IITK/ME/AK/2016/05
Enquiry open date: 07/12/2016 Tender due date: 26/12/2016

A. Direct Metal Laser Deposition System (Metal Additive Manufacturing System based on Selective Laser Melting)

We intend to purchase a **Metal Additive Manufacturing System based on Selective Laser Melting**. Interested bidders are, therefore, requested to participate in a Pre-bid conference and to send your sealed offer in two bid system as per the instructions given below.

Pre-bid Conference:

A Pre-bid conference shall be held on **14th December, 2016 at 2:30 P.M**. in **seminar room (FB370) of Department of Mechanical Engineering, IIT Kanpur**. All prospective bidders are requested to attend the pre-bid conference (in person/ over skype) and should register for it by sending an email to undersigned latest by 5:00 P.M., 11th December 2016. Participation in pre-bid conference is must for every prospective bidders.

Two Bid System:

(a) Technical bid consisting of all technical details along with commercial terms and conditions and
(b) Financial bid indicating item-wise price for the items mentioned in the technical bid.
Technical bids shall be opened at the first instance and evaluated by technical committee. At the second stage financial bids of the only technically qualified bidders shall be opened for financial evaluation and ranking before awarding the tender.
The prospective suppliers are required to send quotation in two separate sealed envelopes, as "**Technical Bid**" and "**Financial Bid**". The **Technical Bid** should not mention any price. The **Financial Bid** should include the detailed price quotation clearly including the cost of the equipment, taxes, service charges if any, shipping and handling charges. The two envelops should reach to the undersigned before the last date and time.

Schedule of the tender process:

1.	Pre-bid conference	14th December, 2016 at 2:30 P.M.
2.	Last date and time for tender submission	26th December, 2016 up to 5:00 P.M.

B. Technical specifications:

1. Additive Manufacturing (AM) System should be based on **Selective Laser Melting**, i.e., it should be able to completely melt metal powder forming a melt pool, and to create parts with density as 99.9% or more (compared to solid material).

2. System quoted should have the capability to operate on both reactive and non-reactive materials. **Manufacturers with AM system incapable of handling reactive materials need not apply.**
3. It should be equipped with **Fiber Laser ≥ 100 W** with **beam focus diameter ≤ 50 µm**.
4. It is preferable if the system operate in both Nitrogen and Argon inert gas environment.
5. Minimum Build Size: **90×90×75 mm** (approx. the size of the components that can be manufactured)
6. Materials: In a single system, all of the following materials capability to be available
   a) Stainless steel
   b) Aluminum alloy (AlSi10Mg)
   c) Titanium alloy (Ti6Al4V)
   d) Commercially pure Titanium
   e) Cobalt-chromium alloy
7. Minimum Powder Layer Thickness: 20 µm. System should allow to vary the Layer Thickness.
8. **Usage of third party material options in the system should not void warranty of machine, a certificate to be provided by the manufacturer in their technical bid.**
9. **Parameters governing the additive manufacturing process should be open and freely editable to the users.**
10. It should have an in-built full HD camera (**≥ 8 MP**) for overview during the build-up process, the camera should operate in the hot environment in the building chamber.
11. It is highly preferable to have a separate build chamber for handling of reactive material.
12. AM system should come along with sieving station capable of sieving both reactive and non-reactive material.
13. AM system should have software with following capabilities:
    a) Viewing, orienting, layout (3D nesting) of multiple CAD (STL) files
    b) Edit feature to fix bad STL or sliced files, including those from 3D scanning
    c) Automatic generation of different types of supports (angle, gap, volume etc.)
    d) Indicator for material required (for a job), utilization, and remaining
    e) Automatic log-keeping and display of all jobs done, and maintenance status.
    f) Indications and warnings for any mal-functioning (positioning, breakages, leakages, gas concentration, energy source, etc.)

14. Documentation to be provided with machine :
    a) Operation Manual
    b) Software Instruction Manual
    c) Maintenance, Troubleshooting and Safety Guidelines
    d) Handling of accessories Guidelines
    e) Drawings of build platforms for local production/procurement

C. Essential Components to be supplied by the OEM

1. Metal Additive Manufacturing System based on Selective Laser Melting with above-mentioned specifications.

2. All essential softwares with above-mentioned specifications required to operate the machine.
3. Wet separator.
4. Wear parts.

D. Optional Components

1. Mention price of each material per kg and their shelf life.
   a) Stainless steel
   b) Aluminum alloy (AlSi10Mg)
   c) Titanium alloy (Ti6Al4V)
   d) Commercially pure Titanium
   e) Cobalt-chromium alloy

2. Build plates for each material mentioned in pt. D.1.
3. Semi-automatic sieving station.
4. Nitrogen generator.
5. Argon inert gas system consisting of empty gas cylinders and connection kit.
6. Additional building chamber for handling of reactive materials.
7. Suitable furnace for handling heat treatment of components made using above-mentioned materials.
8. Shot blasting cabinet.
9. Camera for overview during the build-up process.
10. Computer workstation required in the AM system.
11. Additional machine and laser warranty (Total warranty: five years).
12. Annual maintenance plan price details.

**Quote price of essential and optional components separately

E. Installation, Commissioning and Training

1. The delivery of the equipment should be considered complete only after successful commissioning of the instrument at our site.
2. The pre-installation requirements should be communicated to us well in advance of the installation.
3. The supplier should provide **complete training on machine and software at the installation site**.

F. Terms and Conditions

1. Prices should be on FOB and CIF (IIT Kanpur).
2. Prices should include installation and training cost, and all additional charges including freight, insurance etc.
3. Discount: **maximum educational-discount** to be provided.

4. Normal payment terms for the Institute will be applicable (**90%** on delivery of the items and the remaining **10%** after satisfactory installation/ inspection).
5. Quotation validity: no less than **90** days from the date of quotation submission.
6. Quotations should carry proper certifications such as, agency certificates, proprietary certificates, printed company profile, detail technical specification, detailed user-list for similar equipment with phone numbers.
7. **An undertaking that the vendor will supply all the spares and services for the equipment for at least 10 years from the date of commissioning.**
8. Delivery must be within 12-16 weeks. Earlier would be better.
9. **OEM to have dedicated certified Service Engineer for the Metal Machine based in India with service certification from OEM. Supporting documents regarding Engineer certification to be submitted.**
10. **There should be on-site prompt service available to us during the entire warranty period (as many as needed).**
11. **In case of major breakdown when your Indian representative is unable to handle it, then there should be free visits by engineer from respective OEM country. If response time increases against the mutually decided period then warranty should be extended by that period.**
12. **Parameter set is to be provided by the OEM for each material specified in technical specification pt. B.6 irrespective of whether the raw material is purchased from OEM or not.**
13. Datasheet for each material specified in technical specification pt. B.6 to be provided for material as well as printed part.
    a) The datasheet to have information about physical and chemical properties such as material composition, density of built part.
    b) Mechanical properties of built part, i.e., tensile strength, yield strength, elongation at break, hardness value, and surface roughness (achieved before and after shot peening).
14. Mill test certificate to be provided for each material specified in technical specification pt. B.6 for powder material as well as for built part.
15. **All offers other than those from the Principal/OEM should be supported by an authority letter from the manufacturer authorizing the supplier to tender on their behalf.**

Any questions, technical or otherwise should be directed to the undersigned via phone, and/or e-mail.

Dr. Arvind Kumar
Dept. of Mechanical Engineering
IIT Kanpur
Kanpur - 208016, U.P.
India
Phone: +91-512-259-7484
E-mail: **arvindkr@iitk.ac.in**

CHECK LIST

DULY FILLED CHECK LIST TO BE ATTACHED WITH THE TECHNICAL BID

S. No.	**Particulars**	**Check Mark**
1.	Whether technical specifications of the quoted equipment attached?	Yes/ No
2.	In case of authorized agent/distributor whether certificate/ authorization letter for the same issued by the manufacturer attached?	Yes/ No
3.	Whether split rates of both essential and optional sub units are quoted separately?	Yes/ No
4.	Whether supporting documents regarding certified engineer in India from OEM are attached?	Yes/ No