

	INDIAN INSTITUTE OF TECHNOLOGY MADRAS Chennai 600 036 Telephone : [044] 2257 8356/9760 FAX : [044] 22570545/8366 E-mail: arpp@iitm.ac.in	
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P.SERVAHARANA
Assistant Registrar (Project Purchase)

Ref: ICS/11-12/013/DSTX/TSUN
Date: 01.07.2016

Tender No: ASE/SRCH/026/2016

Due Date: 25.07.2016, 3:30pm

**Technical Bid Opening meeting on 26.07.2016 (Tuesday) at Admin Building
Conference room, 2nd Floor, IIT Madras at 10 a.m. to 11 a.m**

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of
"Endoscopic System – 1 No" conforming to the specifications given in Annexure.

Instructions to the Bidder

- (i) **Preparation of Bids:** - The tenders should be submitted under two-bid system (i.e.) Technical bid and Financial bid.
- (ii) **Delivery of the tender:** - The tender shall be sent to the below-mentioned addresses either by post or by courier so as to reach our office before the due date and time specified in our Schedule. The offer/bid can also be dropped in the tender box on or before the due date and time specified in the schedule. The tender box is kept in the office of the "Assistant Registrar, Project Purchase" IC & SR Building 2nd floor, I.I.T. Madras, Chennai – 600 036, which is also the address for communication.
- (iii) **Opening of the tender:** - The offer/Bids will be opened by a committee duly constituted for this purpose. The technical bids will be opened first and it will be examined by a technical committee which will decide the suitability of the bid as per our specifications and requirements. The bidders are requested to attend the opening of **Technical bids schedule on 26.07.2016 (Tuesday) at Admin Building, Conference room, 2nd Floor, IIT Madras at 10 a.m. to 11 a.m.** In respect of opening of financial bid, those bidders who are technically qualified only will be called for.

P. SERVAHARANA
 ASSISTANT REGISTRAR (PROJECT PURCHASE)
 IC & SR Building 2nd Floor, I.I.T. Madras - 600 036

- (iv) **Prices:** - The price should be quoted in nett per unit (after breakup) and must include all packing and delivery charges to various Departments/Institutions. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of tax & duties should be clearly indicated.

The price should be quoted without custom duty and excise duty, since I.I.T. Madras is exempt from payment of excise duty, and the custom duty will be paid at concessional rate against duty exemption certificate.

In case of import supply, the price should be quoted on EX-WORKS and CIP basis indicating the mode of shipment.

- (v) **Agency Commission:** - Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign Principal should indicate about the percentage of payment and it should be included in the originally quoted basic price, if any.
- (vi) **Terms of Delivery:** - The item should be supplied to our various Departments/Institutions as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
- (vii) **Other Terms & Condition:** - please refer the specifications for other terms & conditions.
- (viii) IIT Madras reserves the full right to accept / reject any tender at stage without assigning any reason.

Yours sincerely,


P. SARVAHARANA
Assistant Registrar (Project Purchase)
IC&SR, I.I.T. Madras

पी. सार्वहरणा / P. SARVAHARANA
सहायक कुलसचिव (परियोजना क्रय)
ASSISTANT REGISTRAR (PROJECT PURCHASE)
आईसी एवं एसआर केन्द्र / Centre for IC & SR
आईआईटी मद्रास / I.I.T. MADRAS - 600 036

SCHEDULE

Important Conditions of the tender

1. The due date for the submission of the tender is **25.07.2016, 3:30pm.**
2. The offers / bids should be submitted in two bids systems (i.e.) Technical bid and Financial bid. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and Financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The Open Tender for supply of " _____ " should be written on the left side of the Outer bigger cover and sealed.
3. **EMD:** - EMD of Rs.2,00,000/- (Rupees Two Lakhs) for Endoscopic System to be submitted by the bidder. The EMD should be included in the Financial bid which will not be opened for Technical evaluation. Enclosing the EMD in the Technical bid will automatically disqualify the tenderer. EMD should be in the form of DD in favour of "The Registrar, Indian Institute of Technology Madras" and payable at Chennai. The tender without EMD would be considered as UNRESPONSIVE and REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD (Bid Security) will be refunded to the successful bidder on receipt of Performance Security.
4. **Performance Security:-** The successful bidder should submit Performance Security for an amount of 5% of the value of the contract/supply. The Performance Security may be furnished in the form of an Account Payee DD, FD Receipt from the commercial bank, Bank Guarantee from any nationalized bank of India will be an acceptable.

Only after submission of Performance Security, Purchase Order/Work Order will be released / L.C will be opened.

Performance Security in the form of Bank Guarantee:- In case the successful bidder wishes to submit Performance Security in the form of Bank Guarantee, the Bank Guarantee should be routed through the Beneficiary Bank to the end user bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.

The Bank Guarantee should remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including the warranty obligations.

5. If an Indian agent is involved, the following documents must be enclosed:
Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian Agent.
 - ✓ Copy of the agency agreement with the foreign principal and the precise relationship between them and their mutual interest in the business.
 - ✓ The enlistment of the Indian agent with Director General of Supplies & Disposals under the Compulsory Registration Scheme of Ministry of Finance.
6. The offer/bids should be sent only for a machine that is available in the market and supplied to a number of customers. A list of customers in India and abroad with details must accompany the quotations. Quotations for a prototype machine will not be accepted.
7. Original catalogue (not any photocopy) of the quoted model duly signed by the principals must accompany the quotation in the Technical bid. No prices should ever be included in the Technical bid.
8. Documentary proof for the claimed position and repetition accuracies must be obtained from the principals and submitted along with the relevant pages of the standards.
9. Compliance or Confirmation report with reference to the specifications and other terms & conditions should also be obtained from the principal.
10. **Validity:** Validity of Quotation not less than 90 days from the due date of tender.
11. **Delivery Schedule:-** The tenderer should indicate clearly the time required for delivery of the item. In case there is any deviation in the delivery schedule, liquidated damages clause will be enforced or penalty for the delayed supply period will be levied.
12. **Risk Purchase Clause:-** In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
13. **Payment:-** No Advance payment will be made for Indigenous purchase. However 90% Payment against Delivery and 10% after installation is agreed to wherever the installation is involved. In case of import supplies the payment will be made only through 100% Letter of Credit and (90% payment will be released shipping documents and 10% after installation wherever the installation is being done).
14. **Advance Payment:-** No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Foreign Vendor has to submit a Bank Guarantee equal to the amount of advance payment and it should be routed through the Beneficiary Bank to the end user Bank. Otherwise, the Indian Agent of the foreign vendor has to submit a Bank Guarantee through a Nationalized Bank of India.

15. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within 15 to 20 days from the date of receipt of the item at site of IIT Madras.
16. **Warranty/Guarantee:** - The vendors should provide a warranty for at least 12 months from the date of Commissioning of the setup. Any extended warranty offered for the same has to be mentioned separately.
17. **Late offer:** - The offers received after the due date and time will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
18. **Acceptance and Rejection:** - I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.
19. **Do not quote the optional items or additional items unless otherwise mentioned in the Tender documents / Specifications.**
20. **Disputes and Jurisdiction:** - Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.
21. All Amendments, time extension, clarifications etc., will be uploaded on the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

Acknowledgement:- It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

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Specifications of the endoscopic system for visualization of in-cylinder events in an internal combustion engine

Supply qty- 1 set.

This endoscopic system will be used to visualize fuel spray and combustion events inside the combustion chamber of an IC engine. The system should be capable for crank-angle resolved image data acquisition of fuel spray and combustion images in both spark-ignition and diesel engines. Technical requirements of this system are listed below:

Optical access	<p>The system should include transmitting and receiving optics through single optical access in the combustion chamber.</p> <p>This system should also be capable to use for visualizing port-fuel injection events.</p>
Total size for the optical access	<p>The sleeve in which the optical window and endoscopic probe is mounted should not exceed the size of M12.</p>
Operation and cooling arrangement of endoscope	<p>The system should be operable for at least 15 minutes (or longer) under firing conditions for both SI and CI engines. The vendor should provide details of automotive research and development divisions (government funded institutions and leading automobile industries) using the same system under firing conditions. IITM may reject the offer in case of any doubt.</p> <p>The design of the sleeve, optical window and probe should be such that the probe can be removed and placed multiple times with ease and without any damage.</p> <p>If a cooling arrangement is required for the endoscopic system, a cooling arrangement using compressed air should be included.</p> <p>In case of cooled systems, a filter unit should be included to ensure oil-free and dust-free cooling air supply for the endoscope. A flow controller should also be included to regulate the cooling air supply.</p>
Light source unit	<p>Light source unit should be integrated with the endoscope for visualizing crank-angle resolved fuel spray events.</p>
Camera specifications	<p>The system should incorporate a digital color camera with an extended image processing software for enhanced optical diagnosis of combustion and injection phenomena.</p> <p>Picture resolution: 1024 x 1024 (or higher) pixels at 1000 fps (or higher) 640 x 480 (or higher) pixels at 10000 fps (or higher); Dynamic resolution: 12 bit (4095 steps) (or better) Shutter speed: Minimum of 1 microsecond (or shorter) to a maximum of 10 milliseconds (or larger)</p> <p>The system should transmit digitized images from camera to</p>

	<p>PC without quality loss.</p> <p>It should be possible to connect a high sensitive camera in future if required.</p>
Field of view (FoV) and viewing direction	<p>FoV should be 65 degree or better.</p> <p>Multiple options should be provided by the vendor regarding the viewing direction including zero degree. IITM will confirm viewing direction based on offer.</p> <p>Vendor should provide additional price (as an option) if a new probe is to be ordered for a different viewing angle in place of the ordered probe, and any other item(s) to be replaced for this purpose.</p>
Crank Angle Encoder	0.1 degree crank angle resolution.
Control Unit	The Control Unit should be integrated with the Light Source Unit. It simultaneously should control the timing of the light source as well as the camera timing. Both, the shutter opening of the camera as well as the light should be possible to be operated based on the crank angle position.
Software	For recording, animation and image processing. The output must be obtained on a PC. Crank-angle based signal processing must be possible.
PC	New computer suitable to carry out the data acquisition and analysis.
Others	<p>Camera fixing device (or required mounts) should be provided with the offer.</p> <p>Required lenses for endoscope – technical specifications such as focal length, and its location with respect to the probe and camera should be provided, along with necessary lens mounts and couplers.</p> <p>Set of connecting cables as required.</p> <p>Tool to mount or dismantle the sleeve, window and probe.</p> <p>Spare parts – Mounting sleeve and optical window, etc.</p> <p>User manual, etc.</p>
Technical support	Technical support on above quote (or offer) should be defined clearly. IITM may reject the offer if support conditions are not provided.
Optional items and services (Cost for this part should be quoted separately as an option. This cost will not be included in comparing commercial bids.)	<p>Feasibility study for mounting the endoscope on test engine (spark-ignition or diesel, as required).</p> <p>Cylinder head machining.</p> <p>Installation and commissioning.</p> <p>Additional software's recommended.</p> <p>Others, if any.</p>

The system must visualize and record images of injection and combustion processes, in addition mechanical motion of components in both diesel and gasoline engines under actual operating conditions. Vendor should clearly mention individual cost and details of all items, and any additional items required or to be provided by the end user before using the system, for example, compressed air, etc.

Vendor must provide required insulation, quartz window and cooling arrangements as required for the endoscope supplied.

You should clearly specify terms and conditions for support during both warranty and post-warranty periods.

Warranty:

The vendor should provide the warranty of 24 months from the date of commissioning of the setup. The vendor should clearly indicate the terms of warranty along with their quote.

The vendor must have supplied similar model of base equipment in reputed automotive research and development laboratories of government funded institutions or research and development divisions of leading automobile industries worldwide during the past 2 years, and have been operated under firing conditions. The vendor should provide the details of organizations (with contact details) where such systems have been supplied. Customer feedbacks regarding “performance and after sales service” may be considered in the final scrutiny.

You should provide purchase order copies of at least five different customers this endoscopic system was supplied (preferably in India).

For technical clarifications, please contact.

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Please quote your lowest price for the equipment meeting the above requirement.