



COEP Technological University

A Unitary Public University of Government of Maharashtra
(Formerly College of Engineering Pune)

Department of Metallurgy and Materials Engineering

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Enquiry Letter

Sealed Quotation are invited by the **Department of Metallurgy and Materials Engineering, COEP Technological University Pune** from reputed vendors for purchase of **AI based Metallography Image Analysis System (QTY.: 02 No.)**.

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|---------------------------------------|--|
| Enquiry Number: - | COEPTU/Met. Engg/Enq/Equipment Purchase / AI based Metallography Image Analysis system/2024-25/01 |
| Enquiry Date:- | 13 February 2025 |
| Description & Qty: - | <ul style="list-style-type: none">• AI based Metallography Image Analysis system (Includes Inverted Metallurgical Microscope, Digital Colour Camera and AI based Image Analysis Software)• Detail Technical specifications are given at the end of this tabular format. *• Quantity: 02 numbers |
| Location: - | Metallography Lab-I, Dept of Metallurgy and Materials Engineering |
| Quotation Submission Date and Time: - | Up to 21 February 2025, 3.00pm |
| Quotation Opening Date and Time: - | 24 February 2025, at 3.00 pm |
| Quotation Submission Place: - | Metallurgy office, Department of Metallurgy and Materials Engineering, COEP Technological University, Wellesley Road, Shivajinagar, Pune-411005 |
| Quotation Opening Place: - | Head, Department of Metallurgy and Materials Engineering, COEP Technological University, Wellesley Road, Shivajinagar, Pune-411005 |

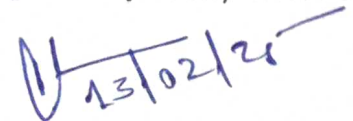
***Technical Specification for AI based Metallography Image Analysis System:**

| A | Inverted Metallurgical Microscope (Magnification range :10 X to 1000 X Dry) | |
|-----------|--|--|
| 1. | Stand | Rugged and sturdy stand with the following features: <ul style="list-style-type: none"> • LED illumination for reflected light, suitable for 230V 50Hz power supply. • Co-axial coarse and fine harmonic drive focusing knobs, low positioned for convenient operation. • Upgradable for Dark Field and DIC observation |
| 2. | Objective | Infinity plan achromatic objectives – <ul style="list-style-type: none"> • PL L5X/0.12 working distance : 26.1 mm • PL L10X/0.25 working distance : 20.2 mm • PL L20X/0.40 working distance : 8.80 mm • PL L50X/0.70 working distance : 3.68 mm • PL L100X/0.85 working distance : 0.40 mm |
| 3 | Eyepiece | <ul style="list-style-type: none"> • Pair of Wide fields focusing eyepieces(10X) • It should be marked with ± 5 diopter settings. • Graduated Eyepiece 10X (10mm/100 parts) • Stage micrometer (1mm/100 parts) for calibration of microscope. |
| 4. | Nosepiece | Quintuple or Sixtuple revolving nosepieces (capable of accommodating 5 or 6 objectives) mounted on ball bearing with highly precise click stops. It should be inclined backwards for convenience of specimen viewing and operation |
| 5. | Illumination | <ul style="list-style-type: none"> • LED illumination, lamp housing with centering facility. • Full range intensity variation with conveniently placed knobs. • Frosted Glass, Blue, green, and yellow filters included • Integrated field diaphragm, aperture diaphragm • Puller type polarizer |
| 6. | Stage | <ul style="list-style-type: none"> • Mechanical stage overall size: 250mmX250mm (approx.) • Moving range: 30mmX30mm (approx.) • Rotundity and rotatable stage size: maximal measurement is $\Phi 130$mm and minimal clear aperture is less than $\Phi 12$mm • Upgradable for Motorized stage operation |
| 7. | Photography Port | <ul style="list-style-type: none"> • C mount port to adopt camera |

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|----------------------------|--|--|--------------|-------------------|----------------------------|---------------------|--------------------|------------------------|------------|-----------|--------------|------------------------|-------------------------|---------------------|-----|--------|---------------|-------------|
| B | Digital color camera | | | | | | | | | | | | | | | | | |
| | Specification | <ul style="list-style-type: none"> • Features: • Resolution:5 Megapixel • Pixel Size: 2.2 μm x 2.2 μm • USB 2.0 interface (up to 480 Mbit/s) • 8 Megapixels on-board memory for secure image transmission • Micro-PLC for real-time sequencing (HRTC) • Digital I/O – 1/1 opto-isolated • Horizontal and vertical average binning • Automatic gain control (AGC) • Automatic exposure control (AEC) Exposure time:10 ms to 1 sec. • Technical Specification: <table border="1" data-bbox="422 721 1528 1048"> <tr> <td>Image Sensor</td> <td>1/ 2.5" type CMOS</td> </tr> <tr> <td>Effective picture elements</td> <td>2592 x 1944 (H x V)</td> </tr> <tr> <td>Maximum Frame Rate</td> <td>5.8 at high resolution</td> </tr> <tr> <td>Pixel Size</td> <td>2.2 X 2.2</td> </tr> <tr> <td>Shutter Type</td> <td>Rolling / Global reset</td> </tr> <tr> <td>ADC resolution / output</td> <td>10 bit → 10 / 8 bit</td> </tr> <tr> <td>SNR</td> <td>>38 dB</td> </tr> <tr> <td>Exposure Time</td> <td>10 ms – 1 s</td> </tr> </table> | Image Sensor | 1/ 2.5" type CMOS | Effective picture elements | 2592 x 1944 (H x V) | Maximum Frame Rate | 5.8 at high resolution | Pixel Size | 2.2 X 2.2 | Shutter Type | Rolling / Global reset | ADC resolution / output | 10 bit → 10 / 8 bit | SNR | >38 dB | Exposure Time | 10 ms – 1 s |
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| ADC resolution / output | 10 bit → 10 / 8 bit | | | | | | | | | | | | | | | | | |
| SNR | >38 dB | | | | | | | | | | | | | | | | | |
| Exposure Time | 10 ms – 1 s | | | | | | | | | | | | | | | | | |
| C | AI based Image Analysis Software | | | | | | | | | | | | | | | | | |
| | Artificial Intelligence Integration | <ul style="list-style-type: none"> • AI Model Training module • AI Image Recognition module • AI Focus recognition module • Adaptability of Analysis features to be integrated with AI | | | | | | | | | | | | | | | | |
| | Image Processing Module | <ul style="list-style-type: none"> • Grain Size Analysis (Intercept method and planimetric method): as per ASTM E 112, E1382, IS4748 & ISO643, Duplex grain as per ASTM E1181, Largest grain ALA as per ASTM E930 • Phase Analysis with AI Integration, ASTM E562 ASTM E1245 • Inclusion Analysis as per ASTM E45, E1122, DIN 50602, EN10247, JIS G 0555, Inclusion analysis of as per ASTM Standard B796-02 • Cast Iron Analysis as per ASTM A247, • Nodular Cast Iron as per ASTM E 2567-11 • Nonferrous alloy Analysis: DAS and -SDAS • Porosity Estimation as per ASTM B27 • Banding Analysis as per ASTM E1268 • Decarburization depth Analysis as per ASTM E1077 • 2-D analysis: object count, distance, area etc • Panorama view: stitching of multiple images in X and y Direction • Comparison Test Methods: Comparison of test images with standard chart methods: ASTM E112 ASTM E45, ASTM A247 ISO 945 | | | | | | | | | | | | | | | | |

Terms & Conditions: -

1. Fax and Email quotation are not acceptable.
2. The taxes, insurance, freight, packing and forwarding charges if any be quoted in Indian Rupees separately.
3. The rates shall be valid for 90days.
4. Validity: Quotation Validity at least 90 days from the due date.
5. Quotations shall be sent in sealed envelopes clearly marked Quotation for Supply and Installation of **AI based Metallography Image Analysis System (Qty.: 02 Numbers)**, Enquiry Number, Enquiry date and Enquiry due date addressed to The Head, Department of Metallurgy and Materials Engineering, COEP Technological University Pune-411 005
6. 100% payment will be paid after satisfactory delivery, installation and commissioning/work.
7. **Microscope, camera and software should be from same manufacturer for better integration and service support**
8. **All bidders should demonstrate the equipment and specifications in our department.**
9. Please specify the make and model of the item.
10. Quotation(s) received after **last date of Quotation submission will be rejected.**
11. Delivery/Work Period is **within 03 weeks only** from the **date of issue of Purchase Order(P.O)**. No extension shall be given for supply.
In such case, the penalty conditions are applicable for the late delivery as per Government norms.
 - a) at the rate of 0.5 % per week; the maximum limit of 10% shall be charged in case of PO value is less than 2 Lakh.
 - OR
 - b) at the rate of 0.5 per week; maximum limit of 5% shall be charged in case of PO value is 2 Lakh and above.
12. All following documents/certificates should be provided / attached at the time quotation submission.
 - a) Shop Act License/Incorporation Certificate/Firm Registration Certificate Copy.
 - b) PAN Card Copy c) GST Certificate Copy.
13. Optional items should be quoted in separate sheets otherwise your quote will be rejected
14. Supply/Work and Installation: - Vendor shall be responsible for successful installation, commissioning and testing of the supplied items at Department of Metallurgy and Materials Engineering, COEP Technological University Pune-411005. Any defective component/device will be replaced by the vendor at his cost.
15. **Warranty: One Year from the date of installation**
16. The Registrar of COEP Technological University Pune reserves right to reject any one or all the quotation(s) without assigning any reasons there for.

 13/02/25

Head

Department of Metallurgy and Materials Engineering
COEP Technological University