VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA, ODISHA
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QUOTATION CALL NOTICE

No. VSSUT/MME/ 9072 /2014 **Date: 04.09.2014**

Sub: Quotation for supply of the following Article/Materials, their technical specifications are specified in different annexures.

Dear Sir,

Sealed Quotation is hereby invited from the Suppliers having valid Income Tax and VAT registration No. for supply of the following Articles/Materials at the premises of VSSUT, Burla as per terms and conditions mentioned below. The sealed quotation shall reach the undersigned on or before **30.09.2014**. Quotations received beyond this date are liable to be rejected. The quotation letter must be addressed to **The Comptroller of Finance, VSSUT Burla with quotation call notice number on the top of the envelope.**

Table

Sl. No.	Description of the Materials	Number	Remarks
1.	**Upright Metallurgical Microscope with Image analysis software as specified in *Annexure – I***	**01**	
2.	**Upright Trinocular Metallurgical Microscope as specified in *Annexure – II***	**01**	
3.	**High Temperature Muffle Furnace as specified in *Annexure – III***	**01**	
4.	**Polishing/Grinding machine with multi-speed double disc system as specified in *Annexure – IV***	**01**	
5.	**Abrasive Cutting Machine as specified in *Annexure – V***	**01**	
6.	**Hydraulic Mounting Press with Manual Pressure System as specified in *Annexure – VI***	**01**	

TERMS AND CONDITIONS

1. The undersigned reserves the right to accept or reject any/all quotations without assigning any reason thereof.
2. The quotationer shall quote quality specifications, if any, of the articles/materials/services, unit price and taxes and other duties liable, if any, on the cost separately.
3. The period of warranty of services/replacement, if any, shall be indicated clearly.
4. The sealed quotation shall reach the undersigned on or before **30.09.2014**. Quotations received beyond this date are liable to be rejected.
5. The quotationer shall enclose the xerox copy of Sale Tax and Income Tax certificate.

Yours Faithfully

Sd/-
Comptroller of Finance

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA, ODISHA

No. VSSUT/MME/ 9072 /2014 **Date: 04.09.2014**

Sealed Quotation is hereby invited from the Suppliers having valid Income Tax and Vat registration No. for supply of the following Articles/Materials at the premises of VSSUT, Burla on or before **30.09.2014**.

1. Upright Metallurgical Microscope with Image analysis software
2. Upright Trinocular Metallurgical Microscope
3. High Temperature Muffle Furnace
4. Polishing/Grinding machine with multi-speed double disc system
5. Abrasive Cutting Machine
6. Hydraulic Mounting Press with Manual Pressure System

For more detailed technical specifications, please visit our university website www.vssut.ac.in. The authority reserves the right to accept or reject any/all the quotation without assigning any reason thereof.

Sd/-
Comptroller of Finance

No. VSSUT/MME/ 9073(4) /2014 **Date: 04.09.2014**

Copy to:-

1. M/s Display Lines, 219, Saheed Nagar, Bhubaneswar – 751007 with request to publish the above advertisement in one issue of the all Odisha daily edition of “The Samaja” and “The Times of India” at the I&PR approved/lowest rate. The bill may be sent in triplicate along with a copy of the paper in which the publication is made.
2. University Notice Board of VSSUT, Burla.
3. Prof. I/C, University website for uploading the quotation notice & documents.
4. PA to Hon’ble Vice Chancellor for kind information.

Sd/-
Comptroller of Finance

Technical specification of "Upright Metallurgical Microscopes with Image Analysis software"

Important Technical features:

SL. NO.	PARAMETERS	TECHNICAL FEATURES
1	**Imaging System**	• Bright Field, Oblique Contrast
2	**Materials to examined**	• Metals, Ceramics, Polymers, Composites
3	**Microscope Optics and Objective Lens**	• All the internal microscope optics and objectives within the microscope should be aberration free, infinity corrected and fully apochromatically corrected. • Magnification: ASTM magnification from 50x-1000x at optical level and higher in digital display level; Objective lens required: 5X, 10X, 20X, 50X, 100X • The microscope should have harmonic compensated optical system with Infinity Corrected objective prism set for Differential Interference Contrast
4	**Nosepiece (Objective) revolver**	• Rotating turret with provision for holding at least six objective lenses • Objective revolver with adjustable parfocal-distance, manual fine and coarse Z-focus with harmonic corrected system infinity optics
5	**Eyepieces**	• Magnification: ASTM magnification of 10x/20 • Binocular tube with viewing angle 45^{o}.
6	**Illumination System**	• Types of illumination: Capabilities for bright field, Oblique & polarization • High power LEDs of 25 000 hr service lifetime with additional integrated segmented lighting for oblique illumination.
7	**Light distribution**	• Optical axis/beam path should should be suitably corrected for achieving best image clarity over the entire field of view • Provision for viewing and imaging
8	**Mechanical Stage**	• Stage body and material: Microscope should be robust with vibration damping proof design body & sturdy • Stage dimension: 200 mm x 200 mm (minimum) • Stage movement: X-Y traverse of the stage must be 70 mm x 30 mm or higher • Stage material: Aluminum, ceramic-coated and scratch-resistant, precisely plane-parallel
9	**Focusing**	• Height adjustable focus knobs for coarse and fine focussing on each side of the frame
10	**Digital camera system**	• High Resolution Colour Digital Camera with CMOS sensor, minimum resolution of 5.0 mega Pixel and Pixel size - 3 µm x 3 µm or greater. The camera should allow live video viewing.
11	**Calibration Slides**	• Calibration slides for calibration at different magnification (i.e., 5X, 10X, 20X, 50X, 100X) must be provided
12	**Software and hardware**	• Software and hardware must be provided to interface microscope with computer to allow image storage and live video viewing for focus

13	**Image analysis software**	• **Software Capabilities**: **A**. **Interactive Measurement Tools:** Point, distance, angles, area, perimeter, measurement of circles, ellipses, rectangles and polygons **B**. **Other microstructural measurements and phase quantification**: Determination of grain size; area fraction of phases; particle shape, particle size and particle size distribution; porosity, inclusions; aspect ratio of phases; case depth, decarburisation depth, coating thickness; non-metallic steel inclusion rating software compatible with international standards like ASTM, ISO, DIN, etc.; distribution, shape and size of graphite in cast iron samples as per international standards • **C.** The analysis software must have auto recognition and auto calibration for any change in magnification.
14	**PC, Printer and UPS**	• **PC Requirement**: Intel Pentium Core 2 Duo Processor, 3.0 Ghz, 4GB SD RAM, DIMM-10 no.s, PCI Graphics Adapter 32 MB, 500 GB HDD (Expandable), DVD COMBO DRIVE for CD Read& Write, A minimum of 18.5" LCD TFT Color Monitor, USB Mouse, Computer Operating system: Windows based • **Printer**: Color Laser Printer - A4 Size • **UPS:** Suitable UPS system with minimum one hour backup for the whole unit including PC and printer to handle systems essential power requirements. Systems should be protected against sudden power failure and power surge.
15	**Spares and other items**	• Eye cups for eyepieces (2 No.s) • Dust Cover for complete setup • Tool kit with recommended spares and service • Operation Manual: Two Hard copies
16	**Standards compatibility**	• Relevant ASTM, DIN,ISO standards
17	**Power requirement**	• 220 V AC, 50-60 Hz

		IMPORTANT NOTES
18	**a**	Microscope, digital camera and the software **MUST** be from same manufacturer.
	b	Free warranty for 3 years for the total system and AMC quotation for 3 years after warranty.
	c	The principal to train at least five persons designated by the customer in all aspects of microscopy at the customer site. The specimens for training should be provided by the principal.
	d	**Delivery & installation:** Equipment to be delivered in test ready condition. Calibration of the equipment must be done at the time of installation.

Technical specification of "Upright Trinocular Metallurgical Microscope"

Important Technical features:

SL. NO.	PARAMETERS	TECHNICAL FEATURES
19	**Imaging System**	• Bright Field
20	**Materials to examined**	• Metals, Ceramics, Polymers, Composites
21	**Microscope Optics and Objective Lens**	• Magnification: ASTM magnification from 50x-1000x at optical level and higher in digital display level; Objective lens required: 5X, 10X, 20X, 50X, 100X
22	**Nosepiece (Objective) revolver**	• Plan wide field - 10X, 16X , 20X (Each in pair)
23	**Eyepieces**	• Magnification: ASTM magnification of 10x/20 • Trinocular tube with viewing angle 30^{o}.
24	**Illumination System**	• Types of illumination: Capabilities for bright field • 6 volt, 20 watts Halogen bulbs with intensity control, adjustable condenser, aperture iris diaphragm, field iris diaphragm and filter slot. Fuse 0.5 Amp, located in the base. Reflected light with Polarizer.
25	**Mechanical Stage**	• Integrated mechanical stage size 150mm X 125mm; Right-hand coaxial drop-down X-Y control knobs, Range of motion 15mm X 15mm, with single spring Clip.
26	**Focusing**	• Brass gear train focusing system; Adjustable tension control. Coaxial coarse Mechanism and fine, with dial markings at 0.002mm increments. Adjustable Up-Stop to protect slides from damage.
27	**Calibration Slides**	• Calibration slides for calibration at different magnification (i.e., 5X, 10X, 20X, 50X, 100X) must be provided
28	**Spares and other items**	• Eye cups for eyepieces (2 Nos) • Dust Cover for complete setup • Tool kit with recommended spares and service • Operation Manual: Two Hard copies
29	**Standards compatibility**	• Relevant ASTM, DIN,ISO standards
30	**Power requirement**	• 220 V AC, 50-60 Hz

Technical Specification of "High Temperature Muffle Furnace"

Important Technical features:

DESCRIPTION	TECHNICAL SPECIFICATIONS
Furnace type	High Temperature Muffle Furnace
Working chamber dimension	300 mm L x 250 mm W x 250 mm H
Maximum temperature	1500 deg C
Continuous temperature	1200 - 1500 deg C
Heating element	Kanthal super heating elements Size –6/12, A-50mm X LU-250mm X Le – 225 mm (Nos of Elements – 6 Nos)
Voltage	220 V, single phase AC supply
No. of control zone	One
Type of temperature control	Microprocessor based Programmable controller having 1 program with minimum of 16 segments
Number and location of the thermocouples	Two "B" type Thermocouples must be provided; One thermocouple will be used for measurement of the temperature and the other for over temperature protection.
Heating rate	Maximum rate of heating 8^{o}C per minute and timer of reach the temperature 3 to 4 hours. Continuous shoaking 1600^{o}C for 4 hours and 1450^{o}C for 6 hours.
Temperature Accuracy	High temperature accuracy (+/-1.5 ^{o}C)
Insulation	The insulation inside the furnace should be made out of vacuum formed ceramic fibre block of Zirconia grade with a density of at least 200 kg/m^{3}. The insulation should have low shrinkage as compared to conventional ceramic fiber blankets.
Temperature control system	The furnace should be provided with automatic temperature control system consisting of following: ➢ One automatic PID type programmable temperature indicating controller capable of running a heating/cooling program with at least 12 segments. (Make: Eurotherm model 2416 or equivalent). ➢ One indicating type excess temperature controller. (Eurotherm/West/Honeywell/Equivalent) ➢ Two 'B' type thermocouples (Make: Heatcon or Toshniwal or equivalent
Furnace casing	The furnace casing should be fabricated from mild steel plates duly powder coated. **The furnace should have a suitable vent at the top/back for exhaust.** The outside of the furnace should be suitably **powder coated** to prevent corrosion and rusting. The Furnace should be able to achieve low skin temperature due to accelerated air circulation between insulation and outer casing by means of exhaust fan. Two numbers detachable rack made from SS 304 should be provided inside the furnace.
Furnace Door	The furnace door operation will be manual with hinge joint on one side and suitable handle lever on the other side. The door should also be insulated like side walls to reduce heat loss. The furnace should be provided with a viewing cap. Manual screw type clamps will be provided for proper sealing of door in closed condition. Limit switch will be provided to ensure switching off the heaters once the door is opened.
Muffle	The inner muffle should be made of SS 304 material for withstanding the temp. of 1500 ^{0}C and the wall thickness 3-5mm.
Electrical Connections	The furnace should be provided with an instrument cum control panel. The panel should house all the temperature control instruments as stated above. It should also house the switch gear components to supply power to heating elements. **All electrical components must have CE/Suitable safety certifications. The**

	vendors are required to provide certification of each electrical components used.
Safety features	➢ Excess temperature protection. ➢ Thermocouple breakage alarm ➢ Limit switch to cut off heaters while opening door. ➢ Earthing terminal to avoid electrical current leakage. ➢ Fuse Unit / Circuit breaker to cut off the supply in case of circuit faults.
Accessories	One Minimum Repair Kit of Consumables (Electrical, Fittings, and Seals) should be provided as Spare Kit.

Technical Specification of "Polishing/Grinding machine with multi-speed double disk system"

- System should have two disk polishers, two dedicated for manual polishing.
- Easy insertion and removal of specimens, Intuitive user interface, Easy cleaning with removal, bowl liner and bowl flush, Cover for improved safety, Perfect preparation results with precise force control.
- Rotate speed display in Digital.
- Force and sampling time changeable.
- Polishing disk with two steps stationary speed changed.
- Central force.
- Imported drive for smooth speed change.
- With one-key restore program function.

Technical specification

- Speed of polishing disc: 50-1000 rpm (two steps stationary speed), imported drive for smooth speed change.
- Force arranges: 0-100 N
- Sampling time: 0-999 S
- Max. Diameter of sample: 30 mm
- Diameter of polishing disk: 250 mm
- Voltage: 220 v, 50 Hz
- Net Weight: 45 kg
- Main accessories: Both inflow and outflow water pipes, 2 pieces of additional Al disk set (with holding ring & band)
- Air drier

Technical Specification of "Abrasive Cutting Machine"

Important Technical features:

- Sturdy table model cutter for Metallographic
- sectioning Metals, Ceramic and mineral samples
- Rust proof Steel construction
- 3HP (2.2 k.w), 3 Phase Motor
- Cutting capacity up to 60 mm(Standard size) for standard steels (may not be applicable to all the materials)
- Corrosion Resistant Cutting Chamber for a long product lifetime
- Spindle speed 2800 rpm
- Cut-off wheel dia 10" (250 mm)
- Simple Control Panel with 4 Switches - Start, Stop, Coolant, Tube light and Emergency Stop button with Key and Safety Switch
- Ergonomic Cutting Handle
- Easy Flow Cutting Chamber
- Splash Proof, corrosion resistant with see through hood
- Cooling by two water jets to provide optimum cooling
- Inbuilt movable recirculation coolant tank with 50 liters capacity
- One large drain for coolant recirculation
- 1/3 HP Coolant Pump
- Start button with key for safety
- Small opening in the side wall for long jobs
- Fluorescent light in the working area provides
- Safe and clear illumination
- CamVise Set
- T Slot Bed: 60mm x 190mm with 8mm T-Slot
- Voltage: 415V/50 Hz (R+Y+B+N+E)
- Machine Size : 850mm x 750mm x 1550mm (L x D x H)

Technical Specification of "Hydraulic Mounting Press with Manual Pressure System"

- **Mounting Unit**
  - Cylindrical Mounting dia. 25, 30, 40, 50 mm, 1.25", 1.50"
  - Consisting of heating/cooling unit
- **Mounting Press**

Mounting Parameters:

- Molding Pressure 50-350 bar in steps of 5 bar with suitable preloading facility.
- Heating time 1-20 min in steps of 10 sec increment
- Heating temperature 80-180^{0}C / 176-356^{0}F in steps of 5^{0}C / 41^{0}F
- Cooling time 0-30 min in steps of 10 sec increment

Software and electronics:

- Control Touch pads, turn/push-knob LCD display

Working temperature:

- Temperature, operational 5-40^{0}C / 41-104^{0}F

Supply:

- Voltage / frequency 200-240 V / 50-60 Hz, 1 Phase
- Auto detection and auto switch over
- Two moulds can be simultaneously prepared using Dual Mould Spacer

OTHER DELIVERABLES

- Capability withAutomatic Method Programmability with Built-in Circuit Protection with safe, low-voltage touch panel controls
- User selectable pressure, temperature, heating and cooling time, mount size, language and units of measure
- Buzzer indicating cycle completion
- Easy to clean moulded cabinet and insulated mould closure
- Thermosetting powder as mounting resin viz. Transoptic powder featuring high hardness, low shrinkage, chemical resistance, excellent edge retention and is not degraded by boiling etchants
- Hydraulic system with high accuracy pressure control