

Advertised Tender Enquiry Documents
INDIAN INSTITUTE OF TECHNOLOGY (BHU), VARANASI
(NOTICE INVITING TENDER)

On behalf of the Director, IIT (BHU) Varanasi, online tender from manufactures (or their 'authorized' dealers that they have been authorized to quote in response to this NIT) of the following items are invited:

Sl. No.	Tender No. and Last Date	Specifications & Quantity of the item
1.	Ref. No.: IIT (BHU)/ME/18-19/QTN/02(R&D) Dated: 27-08-2018 Last Date: 18-09-2018, 03:00 PM	Name of the Instrument- : Long Wavelength Infrared Thermo-graphic Camera (Technical Specifications as per Annexure-I) Qty.: 01 Approx Cost: 35 Lakhs

The Tender Documents for the given items will be on Two Bid System consisting of Technical Bid and Price Bid. The Tender Documents will be submitted item-wise in online. Any firm may bid for any number of items but each offer must be item-wise in two bid cover enclosing Technical Bid and Price Bid. **Manual Bid will not be accepted.**

The Tender Document along with detailed specifications, terms and conditions may be downloaded **from the institute website (www.iitbhu.ac.in) under Tenders (www.iitbhu.ac.in/iitnotifications/purchase_enquiries/) & <https://www.eprocure.gov.in/cppp/> by the interested supplier.**

The Tender Fee for this Tender to be paid in the form of Bank Draft in favour of Registrar, IIT(BHU) payable at Varanasi before the Bid Opening Date and time as non-refundable Tender price of Rs. 1000/-. The hard copy of DD for tender fee should be reached on or before the Bid Opening Date and Time at the address: Professor P. Shukla, Department of Mechanical Engineering, Indian Institute of Technology (BHU) Varanasi – 221005.

The Tender should be addressed to **Professor P. Shukla, Department of Mechanical Engineering, Indian Institute of Technology (BHU) Varanasi – 221005** and should be submitted on or before the date and time of Bid opening date as mentioned in critical date sheet on CPPP Portal.

The Institute shall not be responsible for any delay in submitting Bids by online. The Institute reserves the right to accept or reject any bid, cancel the Tender without assigning any reason thereof. No correspondence in this regard will be entertained.

sd/-
(Prof.P. Shukla)

CRITICAL DATE SHEET

Published Date	28-08-2018
Bid Document Download Start Date	28-08-2018 (05:30 PM)
Clarification Start Date	28-08-2018 (05:30 PM)
Clarification End Date	10-09-2018 (05:00 PM)
Pre bid meeting	NA
Bid Submission Start Date	28-08-2018 (05:30 PM)
Bid Document Download End Date	18-09-2018 (02:00 PM)
Bid Submission End Date	18-09-2018 (03:00 PM)
Bid Opening Date	19-09-2018 (03:30 PM)
Address For Communication	Prof. P. Shukla Department of Mechanical Engineering Indian Institute of Technology (Banaras Hindu University), Varanasi – 221005, U.P., INDIA E-mail: pshukla.mec@itbhu.ac.in

FORMAT OF BANK GUARANTEE FORM

1. This guarantee should be furnished by a Nationalized Bank / scheduled Bank, authorized by RBI to issue a Bank Guarantee.
2. This bank guarantee should be furnished on stamp paper of Rs. 100/-
3. The stamp paper should have been purchased in the Name of the Bank executing the Guarantee.
4. **In the case of foreign bidder the B.G may be furnished by an international reputed bank acceptable to the PURCHASER countersigned by any Nationalized / Scheduled Bank in India authorized by Reserve Bank of India.**

DATE:
BANK GUARANTEE NO:

Ref.: _____
To
Indian Institute of Technology
(Banaras Hindu University)
Varanasi-221005

Dear Sirs,

In accordance with your ‘Invitation to Bid’ under your Tender No: _____
M/s: _____
herein after called the Contractor/supplier, with the following Directors on their Board of Directors / partners of the firm.

1. _____
2. _____
3. _____
4. _____

Agrees for the contract/supplies:

As an irrevocable Bank Guarantee for an amount of Rs. _____ (in words and figures) valid for _____ days from _____ is required to be submitted by the Contractor/Supplier which amount is liable to be forfeited by the purchaser in the event of 1) the withdrawal or revision of the offer by the Bidder as a condition within the validity period. (2) Non-acceptance of the Letter of Intent / purchase order by the bidder when issued within the validity period. (3) failure to furnish the valid contract performance guarantee by the bidder within one month from the receipt of the purchase order and (4) on the happening of any contingencies mentioned in the bid documents such as _____.

We, the _____ Bank at _____
having our Head office at _____ (Local address) Guarantee and undertake to pay immediately on first demand by IIT (BHU) the amount of _____ (in figure and words)

without any reservation., protest, demur and recourse. Any such demand made by the Purchaser shall be conclusive and binding on the Bank irrespective of any dispute or difference raised by the purchaser.

The guarantee shall be irrevocable and shall remain valid up to _____ (This date should be 6 months after execution of the order). If any further extension of this guarantee is required the same shall be extended to such required period (not exceeding one year) on receiving instruction from M/s _____ on whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorized officer has set its hand and stamp on this _____ day of _____ at _____ witness _____.

WITNESS

(Signature).....

Name in (Block letters)

Designation

(Staff Code No.)

(Bank's common Seal)

Official address:

Attorney as per power of Attorney No.

Date:

Annexure-A

DECLARATION

1. I, ----- Son /Daughter of Shri -----
----- Proprietor/ Partner/ CEO /MD/ Director/ Authorized Signatory of M/s. -----
----- am competent to sign this declaration and execute this tender document.

2. I have carefully read and understood all the terms and conditions of the tender and hereby convey my acceptance of the same.
3. The information/ documents furnished along with the above application are true and authentic to the best of my knowledge and belief.
4. I/ we/ am are well aware of the fact that furnishing of any false information/ fabricated document would lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law.
5. Each page of the tender document and papers submitted by my Company is authenticated, sealed and signed, and I take full responsibility for the entire documents submitted.

Signature of the Authorized Person

Date: -----

Place: -----

Full Name: -----

Company Seal: -----

TECHNICAL SPECIFICATIONS**Research LWIR Thermographic Camera**

1.Construction	Rugged, light weight, all metal construction with provision to mount on tripod (to be provided) IP67 protection with industrial lemo plugs
2. Max. IR radiometric video resolution without software interpolation (specify frame rate)	Greater than 3 Megapixels (2048x1536) @ min. 3Hz – 5Hz using opto-mechanical microscanning
3.Detector pixels	HD format 1024x768
4. Accuracy	Less than $\pm 2\%$ over entire calibration range
5.Spectral range	7.5 μm – 14 μm
6.Measurement range	-40°C – 1200°C in one range
7.Thermal sensitivity	Less than 30mK @ 30°C
8.Filters	Provision for adding spectral filters
9.Frame rate	30Hz to 240Hz in sub windowing mode
10.Zoom	32x digital
11.Focusing	Motorized, automatic, manual via remote control
12.3D image	Z stacking option for increased depth of focus
13.A/D conversion	16 bit
14.Interfaces	DVI, GigE, C-video
15.Control	GigE, RS232, Triggering
16.Operating temperature	-25°C to 50°C
17. Storage temperature	-40°C to 70°C
18.Weight	Less than 2 kg. approx.
19.Protection	IP67, IEC 529, protected against dust & water splashes
20.Geometrical resolutions/ Lenses	To resolve different size objects of 10-100 μm from a distance of 0.5 m or closer with FOV of 4 cm x 4 cm. approx. (provide the FOV & IFOV values of quoted lenses)
21. Tripod	Light weight 3D rugged tripod
22.Cables & transportation case	Power cables, transportation case

23. Compatible Data Acquisition System	i5, 8GB RAM, Hard disk 1 TB, Display 1920x1080, Licensed operating software
24. Preloaded licensed modules for Research Thermography	
A.) Remote Control Module	<p>For linking the thermographic with a PC/notebook with the following functions:</p> <ul style="list-style-type: none"> - Remote control of the camera-operating functions via a graphic interface - Real-time visualization of the digitally transferred thermal image - Storage of real-time thermographic video sequences.
B.) Online Control Module	<p>Control and acquisition software for high speed data collection of digital infrared thermographic images:</p> <ul style="list-style-type: none"> - Digital data are collected at the camera's maximum imaging frequency (till kilohertz area) onto the hard disk or in the RAM - Online differential image mode and temperature profile display - External trigger option, retrigger, multiple signal sequence, retrigger - Freely definable temperature trigger - Set parameters of measuring area and thresholds values, alarm function
C.) Sequence Editor	<p>Manually or automatically select thermographic data from complex thermal image series as well as to filter image series. These may be stored in the raw image material with respective comments or be reconstructed on their basis. Gallery view of sequences.</p>
D.) Macro Editor	<p>Extensive sets of commands can be summarized by the user into a macro without any special programming skills. Complex and repetitive analysis processes can therefore be performed in a time saving and automated way.</p>
E.) AVI Generator	<p>Automatic export of thermal image series or several single images into descriptive AVI movies. Possible to define a partial area of the thermogram, which is designated by the user, for the AVI export. Gained sequences should be played on any commercial media player.</p>
F.) Correction Module	<p>Various models for correcting the emissivity by means of which thermo grams can be corrected globally, with regard the defined partial areas or automatically by pixel.</p> <p>All relevant correction models have been provided in a clearly understandable visual form. With its help the respective measuring situation can be reconstructed. Sources of error-such as interference by radiation from the environment or attenuation properties of the measuring distance-are taken into consideration in calculating the temperature (in the calculation formula) in order to safely avoid faulty measurement. Among others, direct and indirect emissivity corrections by pixel should available. Temperature corrections should be shown live in the thermogram.</p>

G.) Mosaic Module	To produce quickly and easily a combined image. The software will automatically look for places of geometric overlapping and will put them together. The thermo gram resulting therefore can further be analysed with all its measured data.
H.) Thermogram Editor	<p>3D temperature profile and 3D thermogram, palette editor (freely defined thermogram)</p> <p>Powerful integrated measuring and editing functions facilitate a comprehensive and fast analysis of digital thermograms. Numerous automatic functions for image correction and optimization support the user in clearly recognizing and visualizing thermal details of measured objects.</p>
I.) External Visual Image Module	<p>Visual images that have been recorded parallel either by an external camera should be added to the respective thermogram, by just a click of a button or automatically.</p> <p>This serves to clearly allocate measuring scenarios or problem spots.</p>
J.) Analysis Modules	<ul style="list-style-type: none"> - Multi-lingual user interface - Change palette selection and temperature display range - Minimum 4 display editing windows simultaneously - display/add/edit real image - Play/add/edit audio comment - Merging (visual and infrared image) - Integrated WORD-based report function - image export/measured data export into WORD, PDF, TIFF, BMP, JPEG, ASCII - image editing functions (interpolation, rotate, reverse, etc.) - Mirror/distort thermal image - measured areas (spot, line, polygon, rectangle, circle, ellipse) - display table of measured date, parameters and comments - temperature profile diagram - measured areas (curved line, freehand line, circular ring, segment, freehand) - image accumulation - Differential image display and differential spot display - Various statistics functions, histogram - Display 3D thermogram

	<ul style="list-style-type: none"> - Minimum 20 Display/define isotherms - Minimum 5 Improve image by digital filtering - Determine emissivity - Correction of emissivity (global, laminar, selective) - Pre-defined models for correcting emissivity - Models for automatically correcting emissivity by pixel - Adoption of GPS coordinates - Geometric measurement within the thermogram - Play, thin out, store image sequences - Temperature-time-diagram / profile-time-diagram
K.) Report Generator	<ul style="list-style-type: none"> .- Automated analysis and correction of thermographic images - Powerful functions and easy handling - Wide choice in provided report templates - Simple setup of individually adjusted report templates - Storage of report properties in the template - Completed reports can subsequently be altered and extended - By just one click, reports are available as WORD documents
Advanced Features	<ul style="list-style-type: none"> - Handling sequences - Image subtraction - Geometrical measurements - Emissivity as a function of time - Image distortion & image mirroring - Micro sampling - Calculation of RoI - Focus scale - EXE report - 3D AVI

Calibration Facility: This facility should exist with the supplier within India and should be able to calibrate the camera till at least 500 degree Celsius.

Power supply: 230V, 50 Hz

Warranty: Comprehensive warranty for 2 years will be preferred from the date of commissioning for the main system and all accessories.

Note: Bid should include FOR IIT (BHU), Varanasi prices (Custom Clearance will be the responsibility of the supplier and IIT(BHU) will provide Custom Exemption Certificate). Transportation cost with insurance from port of destination to IIT (BHU) Varanasi should also be clearly mentioned separately.

Submit Electronic copy of the Technical specifications and bids.

OTHER TERMS:

1. **Spares:** state availability of spares for ten years.

2. **Indian agency commission:** Should be clearly stated in the financial bid in Indian currency.
3. **Consumable & spares:** List of the consumables and spares to be supplied with the system.
4. **Penalty:** A penalty of 1% of the order value will be applied for late delivery of the goods for each week thereof subject to a maximum of 10%.
5. **Bank Guarantee (BG):** Successful bidder have to furnish **5%** of the order value as a performance security in the shape of Fixed Deposit Receipt / Bank Guarantee in favour of the Registrar, Indian Institute of Technology (BHU) which will be valid for a period of sixty days beyond the date of completion of all contractual obligations of the supplier including warranty obligations. Fixed Deposit Receipt / Bank Guarantee should be issued from a schedule bank in India. Bank guarantee is only applicable for the Supplier who will get the Award of Contract and will submit at the time of installation of the instrument.
6. **Payment:** The payment shall be made by LC. (Where 90% of payment against shipment and balance 10% payment at the time of satisfactory installation and submission of BG).
7. **User List:** Provide users for last 5 years with contact person name, address, phone, and email IDs.
8. **Manuals/Documents:** 1 set of hard copy and 1 set of soft copy in English (preferred as following).
 - i. Operating manual
 - ii. Maintenance manual
 - iii. Servicing manual
 - iv. Programming manual
 - v. Spare parts list with source of supply and prices
 - vi. Description of control interface
 - vii. Circuit diagrams of PLC, drive controls etc
 - viii. Manuals of bought out items incorporated in the system
 - ix. Details of any custom made ICs & components & their sources
 - x. Flow charts of all resident software
 - xi. Test Chart
 - xii. Pre-installation requirements of foundation plan details, electromagnetic interference and vibration.
9. Details of the standard samples to be provided by the company for testing the instruments at the time of installation at site for the demonstration of the performance of equipment.
10. Please provide the segmented quotation for each optional measurement capability.
11. The Tender document should also indicate what kind of service/maintenance is required for the system. Whether this service has to be carried out by a company engineer or it can be carried by trained service personnel within India. The frequency of visit and the charges should be mentioned.
12. The Tender should be enclosed with proper certifications like **Authorization Certificate and Proprietary Certificate** in case of Proprietary items.
13. Complete computer control of operation and measurement on Windows based platform. Give the details of software for measurement and analysis.
14. Pre-installation site preparation/inspection requirements to be indicated and specified along with the bid.
15. Installation and training should be provided free of cost otherwise clearly mentioned with justification.
16. Warranty period to be clearly mentioned and should begin from the date of installation. Annual Maintenance Contract Charges should be clearly mentioned after warranty period.
17. Guaranteed specifications to be demonstrated at the time of installation. Any necessary standard samples for that purpose should be brought by the Service Engineers.
18. On – site training of our staff in operation and maintenance is essential by factory trained personal and provision for training for one person for minimum one week at factory site.

19. Bid should include FOR IIT (BHU), Varanasi prices (Custom Clearance will be the responsibility of the supplier and IIT(BHU) will provide Custom Exemption Certificate).
20. Service manuals with complete circuit diagram and PCB layout for all equipment to be provided with the instrument.
21. Submit Electronic copy of the Technical specifications and bids.
22. The vendor to provide compliance statement with respect to each technical specification in the tender document duly supported by the manufacturer's literature. Any other claim will not be accepted and may lead to rejection of the bid.
23. Printed literature in support of compliance to the prescribed specifications is to be submitted.
24. Compliance report needs to be submitted as a part of the technical bid.
25. In case during shipment period newer versions of software/hardware is available with vendor in lieu of the existing one for which Letter of Credit was opened, then improved version should be made available without any extra cost.
26. Institute reserves the right to visit installation in India of similar capabilities the details with to regard to such installation should be given as a part of technical bid.
27. Technical evaluation by the Institute may include demonstration to verify functionalities and capabilities of the system quoted.

Services: Vendor must submit Factory Acceptance Test procedure supported with relevant printed literature and certificates.

sd/-
(Prof. P.Shukla)

TECHNICAL COMPLIANCE STATEMENT

(To be submitted by bidder duly filled)

Sl. No.	Technical Requirement	YES/NO
1.	Construction	
2.	Max. IR radiometric video resolution without software interpolation (specify frame rate)	
3.	Detector pixels	
4.	Accuracy	
5.	Spectral range	
6.	Measurement range	
7.	Thermal sensitivity	
8.	Filters	
9.	Frame rate	
10.	Zoom	
11.	Focusing	
12.	3D image	
13.	A/D conversion	
14.	Interfaces	
15.	Control	
16.	Operating temperature	
17.	Storage temperature	
18.	Weight	
19.	Protection	
20.	Geometrical resolutions/ Lenses	
21.	Tripod	
22.	Cables & transportation case	
23.	Compatible Data Acquisition System	
24.	Preloaded licensed modules for Research Thermography	

Signature of the Authorized Official