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**Tender Details** 

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**EXPRESSION OF INTEREST ( E.O.I )** 

for

# Supply of FACE, FATI and FAOE facility

CSIR-INSTITUTE OF HIMALAYAN BIORESOURCE TECHNOLOGY (Council of Scientific and Industrial Research) Post Box No.6, Palampur -176061, Himachal Pradesh (INDIA) Tel. 91-01894-230425 Fax No: 91-01894-230433, 230428 e-mail: spo@ihbt.res.in

#### EXPRESSION OF INTEREST (EOI)

CSIR- Institute of Himalayan Bioresource Technology (CSIR – IHBT) Palampur, HP, India is one of the premier laboratories under Council of Scientific and Industrial Research, an autonomous body under Department of Scientific and Industrial Research (Government of India), New Delhi.

Situated among pristine environ in the lap of Dhauladhar ranges, CSIR-IHBT is the only laboratory of the Council of Scientific and Industrial Research in the State of Himachal Pradesh (H.P.), India. Institute has a focused research mandate on bioresources for catalysizing bioeconomy in a sustainable manner.

The institute has: state-of the art laboratories; remote sensing and mapping facilities; internationally recognised herbarium; animal house facility; pilot plants in nutraceuticals, essential oil and herbals; farms and polyhouses. The young and dynamic team of scientists propel the research and work dedicatedly to discover and find solutions to new challenging problems faced by the society. International collaborations further strengthens scientific interactions at a global scale. Promoting industrial growth through technological interventions is a constant endeavour and several technologies developed by the institute are transferred to industries. For socio- economic upliftment, regular training programmes and advisory services are rendered to farmers, floriculturists, tea planters and small entrepreneurs involved in food processing sector. Institute has been recognised as one of the Incubation Centres by MSME Gol and in the area of Affordable Health Care by DSIR. Institute encourages industries to share the technological problems faced them, such that efforts could be made in developing a viable solution. Confidentiality is strictly maintained.

Work on plant adaptation studies and high altitude medicinal plants are further strengthened by the field lab "Centre for High Altitude Biology (CeHAB) situated at Ribling in Lahaul & Spiti district of H.P. Through this centre, institute disseminates technologies by way of trainings and demonstrations that could transform the economy of the region and help in solving unique challenges faced bv them. Institute fosters student-scientist interaction and school children are welcome to visit the Institute. Post graduate students can do project and sharpen their research skills at CSIR-IHBT. Young researchers are welcome for to do Ph.D in cutting edge areas under the able faculty. guidance of expert Institute passionately contribute its bit in the development of society, industry and environment.

With the above back ground, An Expression of Interest (EoI) is initiated at CSIR- IHBT with the prospective manufacturers, their authorized channel partners or agents/suppliers and system integrators to discuss with the Technical Committees on the aspects of utility, technology, feature, literature, design, technical parameters, clientele and other related issues of the equipment and material for the following items to be procured for CSIR-IHBT

SI. No.	File No.	Item Description
01.	4/5(7)22-Pur	FACE, FATI and FAOE facility

#### 1. The address for submission of document and for obtaining further information:

Stores & Purchase Officer CSIR – IHBT, Palampur -176061, Himachal Pradesh (INDIA) Tel. 91-01894-230425 / e-mail : <u>spo@ihbt.res.in</u>

- 2. The Bidding document can be downloaded free of cost directly from Central Public Procurement Portal (CPPP) of Government of India website <a href="http://eprocure.gov.in/epublish/app">http://eprocure.gov.in/epublish/app</a> and CSIR-IHBT website www.ihbt.res.in
- **3. Schedule for submission:** The prospective bidders should adhere to due dates specified in Tender Details corresponding to this Tender. The Schedule for Submission of proposals and Opening of proposals is as follows, through portal etenders.gov.in

Date & Time of Sub proposals	mission of	Date and Time of Opening of proposals	
Date	Time (IST)	Date	Time (IST)
29th December 2022	15:00 Hrs	29th December 2022	15.30 Hrs

- 4. PRESENTATION BY BIDDERS. Presentation by bidders is scheduled for 16.12.2022, from 11.30 A.M onwards. Venue is CSIR- IHBT – J.C Bose Conference Hall. Interested bidders are requested to send email to spo@ihbt.res.in confirming their willingness for making their presentation, on or before 12.12.2022 4.00 p.m. Bidders will be allotted time slots to make presentations
  - **a.** on their products profile in brief
  - **b.** detailed specifications and
  - **<u>c.</u>** technical capabilities.
- 5. The bidders' representatives who will make the presentation should possess all the technical details of the machinery, its capacity, complete information on the company, previous experience, various technologies involved, service centres available in India / abroad and financial capabilities to execute project. The representatives should be capable enough to answer all queries of the Technical Sub Committee.
- 6. The Technical Sub Committee (TSC) shall finalize specifications after knowing/obtaining details about relevant/available technology in the market suiting to the requirement and R&D needs of our Laboratory.
- **7.** For evaluating the responses, CSIR-IHBT may call for further presentations of their case in person or Presentation can be considered via Skype/Video Conferencing also.
- 8. The Director, CSIR- Institute of Himalayan Bioresource Technology (CSIR IHBT) Palampur HP, India reserves the right to accept or reject any or all EOI Notification/tenders/offers or withdraw the Notice at any stage of processing without assigning any reason whatsoever, such an event would not cause obligation of any kind to CSIR- IHBT

# 1. INTRODUCTION

CSIR IHBT requires the FACE, FATI and FAOE facility to test the impact of climate change on plants of the fragile ecosystem of Himalayas

# 2. <u>OBJECTIVE</u>

The objective of this EOI is to receive complete technical proposals, detailed specifications of various machinery / process involved, study drawings, study plant lay outs, understand various technologies and processes involved, understand bidder capabilities to execute such supplies and then finalize specifications, list of machinery / items etc and also set eligibility criteria for bidders etc.

# 3. <u>SCOPE OF SUPPLY</u>

# Specifications for Integrated FACE (Free Air CO2 Enrichment), FATI (Free Air Temperature Increase) and FAOE (Free Air O3 Enrichment) System

Installation of integrated Free Air CO<sub>2</sub>, Ozone & Temperature Enrichment (FACE, FAOE and FATI) facility to mimic climate change scenarios in open field conditions and conduct climate change studies in plants. The facility must contain four rings. Ring 1 Ambient & Ring 2, 3,& 4, with CO2 (380 to 1000 PPM, Ozone (0 to 1000 ppb) and temp elevation/enrichment (ambient plus 3 to 7 deg C, Infrared ceramic module with Controller for temp enrichment with Air Temperature Sensor, Relative Humidity sensors: CO<sub>2</sub> & ozone analyzers & monitoring and control option with real-time timer with controller & supervisory control and data acquisition system & wireless communication system The facility must also include a controlled greenhouse/chamber. The complete detailed specifications of the system are given below :

01	Fabrication of OZONE & FACE, FATE rings (CO <sub>2</sub> , Temp &OZONE)	04
	TOTAL NO OF RINGS TO BE DEVELOPED: 04	
	Ambient/Control ring: 01	
	Elevated CO2, Temp, and Ozone ring: 01	
	Elevated CO2, Temp, and Ozone ring: 01	
	Elevated CO2, Temp, and Ozone ring: 01	
	Construction: High-quality GI/SS pipe	
	Diameter: 6 meters, Height: 10Ft., Shape: Hexagonal	
	$CO_2$ release through High pressurize pipes via a micro nozzle (380ppm to	
	1000 ppm) or better	
	Ozone Release via SS/ PVC pipes Pipes with air blowing system (30 to 100	
	ppb) or better	
	Temp increment (2-3 deg above ambient or higher)	
A	CONSTRUCTION OF AMBIENT RING FOR CO2 & temp, humidity and	01
	ozone monitoring	

С	CONSTRUCTION OF CO2, Temp and ELEVATED O3 enrichment system.	03
	Individual injection points for air supply and Ozone with necessary automated	
	control system and manifold. Control through solenoid and embedded control	
	and monitoring system. Sensors to measure Temp, RH, wind speed, wind	
	direction & ambient ozone concentration.	
	Ozone monitoring and control system: 3	
	RH, temp monitoring system: 3 with required capacity ozone generator &	
	ozone supply line SS pipes/blowing system	
02	CO <sub>2</sub> Control & Monitoring Station	03
	CO2 Analyzer	
	Measuring Method: NDIR single beam method	
	Measuring range: 0 to 0.2%	
	Output Signal: 4-20ma DC linear	
	Indicator: CO2 gas concentration physical scale, Moving coil type, JIS class	
	2-5	
	Power source: 220V AC +/- 10%, 50 Hz	
	Power Consumption: Approx. 18VA	
	Working Temperature: 0 to 40°C	
	Working Humidity: 90%RH or less	
	Storage Temperature: -20 to 50°C	
	Gas sampling: Built-in suction pump and membrane filter	
	Repeatability: ±1% of the full scale or better	
	Zero-point drift: ±10% of full scale/6monthResponse or better time: Approx.	
	10 sec (90% response)	
	Warm-up time: Approx. 30 min.	
	Linearity Accuracy: ±3% of the full scale or better	
	Type of case: Indoor, dustproof type	
	Mass: Approx. 3 kg	
03	CO <sub>2</sub> Monitoring system	05
	Non-dispersive infrared absorption (NDIR) method with outputs:analog 4 to	
	20mA and 0-10 DC or better	
	Measurement range: 0-3,000 ppm display	
	Warm-Up time: <60 second at 22°C or better	
	Voltage output: 0-10vdc, 4-20 Ma	
	Power supply: 24vdc or better	
	Accuracy: +/- 75ppm or +/- 5% of reading or better	
	Relay Output: 30VDC or 250 VAC	
	Sound Alarm: 70db@10cm	

04	Supervisory Control and Data	01
	Acquisition Software	
	✓ Historical & real-time basis data through PC.	
	✓ Memory back up & data storage and free upgradation of software.	
	✓ License software and dongle or hardware lock of SCADA	
	✓ Graphical view of data presentation option	
	✓ The integrated SCADA system language	
	✓ Multilanguage HMI applications TCP/IP Client Serversupport	
	✓ symbols and complex graphic objects	
	✓ communication option via wired or GSM networks	
	✓ Software is accessible from Excel.	
05	Weather station for control of CO2 release & FACE ring arm control	04
	Wind speed range (operation): 1-50 m /s	
	Accuracy: ±0.5 m / sec	
	Resolution: 0.1 m /sec or 0.36 km/ hr	
	Threshold: 0.2m/sec	
	Wind Direction Range: 0-359°	
	Wind Direction Accuracy: ± 7° or better	
	Wind Direction Resolution: 1° or better	
06	Temperature sensors (RTD)	05
	Sensing element: PT100 sensor with class 'A' element	
	Ambient conditions: -20° to + 80 ° Celsius.	
	Range: -100 to +800 °Celsius	
	Output: 4-20 mA DAC	
	Resolution: 0.1°C or better	
	Accuracy: +1% or better	
	Weather Shield: Weather shield coated with weather proof reflective white	
	paint, IP65 weatherproof Head 4-20 ma transmitter	
07	Humidity sensor with transmitter	05
	Power supply: 12~28V DC or better	
	Humidity working range: 0-100%RH	
	Humidity sensing element: Polymer humidity capacitor	
	Output for humidity: 0~5V DC or 0~10V DC or 4~20 mA	
	Accuracy of humidity: +/- 3%RH (1090% RH)	
	Sensitivity for humidity: 0.1% RH	
	Drift rate per year: +/- 0.5 %RH	
	Response Time: 4s or better	

08	PAR sensor	05
	✓ Power Supply: 5-24 VDC or better	
	✓ Calibration Factor: -120-5 µmol m-2 s-1 per mV	
	✓ Calibration Uncertainty: ± 5%	
	✓ Measurement Repeatability: <1%	
	✓ Non-stability (Long-term Drift): <2 % per year or better	
	✓ Non-linearity: <1 % (up to 4000 µmol m-2 s-1	
	✓ Response Time: <1 ms	
	✓ Field of View: 180° or better	
	✓ Spectral Range: 410 nm to 655 nm	
	✓ Directional (Cosine) Response: ± 5 % at 75° zenith angle or better	
	✓ Temperature Response: 0.06 ± 0.06 % per C	
	✓ Operating Environment: -40 to 70° C, 0 to 100 %	
09	O3 Control & Monitoring station with microprocessor based O3 detection	03
	system/analyzer 10-1000 ppb:	
10	Necessary signal cables, PVC/PU tubing work for power supply, CO2 Gas	
	Line, etc., PU tubing, fittings, instrument cable, SMPS,Sampling system and	
	necessary electrification, AIR FLOWING SYSTEM	
11	<b>Ozone Generator</b> and Air Supply Unit with Ozone Output,	03
	Input Supply 230 V A.C,50 Hz, 1 Phase, + 5% supply with an earthling, O3	
	gas outlet SS 316, 6 mm Nozzle I90 TO 100GMS/hr capacity.	
12	Ozone Monitoring	05
	Sensor: Electrochemical type, expected life over 24 months	
	Working Temp: 0-45°C or better	
	Accuracy: + 5% at constant temp,	
	Recorder output: 0-1 Voltand 4-20 Ma	
	Relay Ratings :220V AC, 1A, resistive load,	
	Power Supply: 220 VAC, 50 HZ	
	Instrument Case: IP55 Housing, ABS plastic	
	Gas & Range: Any one as in Table Below, to be specified while ordering Calibration: By calibration gas orsensor	
	Detection limit: 0-1ppm	
13	DATA logging and Transmission unit	05
	Analog to RS485 Converter with WiFi communication, 8-CH analog signal	
	acquisition, isolated RS-485/232 output24-bit AD converter	
	Can program and calibrate modules accuracy via RS-485/232interface	
	esti pregram ana cansiato medalee accuracy na ree rooizozintonaco	
	Signal Input/output: 3000VDC	

	Wide power supply: 8~32VDC	
	High reliability, easy programming and installation.	
	Can program setting module address, baud rate 0-5V voltage signal or 4-	
	20mA current signal inputSupports Modbus RTU protocol	
	DIN35 Rail-mounted	
14	Anemometers	04
	Measure air velocity and direction	
	Measuring ranges: 1 to 50 m/s or better	
	Unit of measurement: m/s	
	Housing: IP65	
15	Compressor 5 HP, 200 lit storage tank, three-phase, single stage, capacity	02
	oil-free operation	
16	Heating system	75 (more
	1000W capacity with ss	to achieve
	Reflector, assembly 25 sets in each ring, each set consists of 2 IR ceramic	target
	heater coil	temperatu
		re)
17	Data Accusation platform	01
	PC with 12GB RAM, 2TB hard disk, 21 inch monitor	
	WiFi based Tower PC	
18	CO2 Manifold system for 10 cylinders with regulator, heating system, CO2 line	01
	etc	
19	Warranty: Minimum one year	
Sr.	Description	Qty
No.		
	GREEN HOUSE FOR RAISING NURSERY PLANTS FOR FACE, FATI and	
	FAOE	
	Dimension: greenhouse/control chamber	
	30 feet x 20feet x 10 feet (Lx W x H)	
	Structure: GI/MS framing and covered with 6mm multiwall clear UVCoated	
	polycarbonate sheet.	
	Control on climate (temperature and light)	
	Iron Benches: 04	
	Iron benches size: 7.5 X 7.5 X 3 feet	
	Frame: All galvanized GI/MS	
	<b>Door</b> covered with polycarbonate sheet.	
	Door Size: 6ft heightX 3.5 ft width normally lockable, with an automatic door	
	closer	

	Civil work: 3 ft brick foundation wall approx 7 to 8 inches for all sides for the	
	chamber.	
02	Instrumentation of chamber	complete
	Necessary signal cables, power cables, fittings, instrument	
	cable, SMPS, contactors and necessary electrification and water line	
03	Temperature sensors (RTD)	01
	Sensing element: PT100 sensor with class 'A' element	
	Ambient conditions: -20° to + 80 ° Celsius.	
	Range: -100 to +800 °Celsius	
	Output: 4-20 mA DAC	
	Resolution: 0.1°C or better	
	Accuracy: +1% or better	
	✓ Weather Shield: Weather shield coated with weather proof reflective	
	white paint, IP65 weatherproof Head 4-20 ma transmitter	
04	Humidity Sensor	01
	✓ Power Supply 12-36 V DC,	
	✓ Humidity working range: 0-100% RH	
	✓ Humidity Sensing element: Polymer humidity capacitor	
	✓ Output for humidity: 0-5 VDC or 0-10 V DC or 4-20mA	
	✓ Accuracy of humidity: ± 2%RH, Repeatability ±0.3% RH	
	✓ Sensitivity for humidity: 0.1%RH,	
	✓ Drift rate per year: ±0.5% RH	
05	Temp control	01
	Cooling System: Evaporating with fan and cellulose coatedcooling pad 4 ft	
	tall × 15 ft wide x 100mm thick with gutter	
	system. All necessary framing material of Aluminium/GI OR suitable window	
	AC to be provided	
06	LED LIGHT: 22 W OR MORE	15 NOS
07	WARRANTY: ONE YEAR	

## MANDATORY CRITERIA / CLAUSE FOR SELECTION OF BIDDER

• Minimum, five order copies of executed FACE/FATE/OZONE projects should be provided by the bidders from any Indian universities/research organizations/Govt Institutes.

• The bid must be supported with order copies of end user name and contact details with date and supply year.

• Bidders must quote the complete functional system (FACE/FATI/FAOE and Glasshouse).

# 4. Eligibility Criteria

## <u>Technical</u>

1. Original Equipment Manufacturers (OEMs) / Authorized Agent who have proven expertise in successful supply of FACE, FATI and FAOE facility. The bidder should have successfully supplied and installed at least one FACE, FATI and FAOE facility of similar specifications, in the last 2 years as on the date of bid submission. Documentary evidence to this effect shall be attached to the EOI / Proposal.

#### **Commercial**

- 1. The bidder should not have been black listed / holiday listed by any other CSIR laboratory, or by any other R&D organization or by Government of India. A self-declaration letter in this regard must be enclosed.
- 2. Proposals

### 1. Technical

- a) Detailed specifications of various machinery / instruments involved supported by technical brochures / data sheets in English. The Bidder shall provide the complete technical information (without any IP related material) with specific OEM name, Model Number etc.
- b) Write up / detailed brochure / datasheets on the technologies / techniques involved.
- c) Electrical requirements voltage, frequency, single phase / three phases, total power consumption in kwh.
- d) Requirement of special foundation / flooring for each machine. If required, then clear details.
- e) Plant lay out drawing in English. Dimensions must be in Metric (mm / cm / Metres).
- f) Other utilities required
- g) Air conditioning, UPS requirements if any.
- h) Stabilized power supply requirements (like servo stabilizer etc.).
- i) Backup power supply like diesel generator requirements
- j) Total space for plant requirements

### 2. Bidder Information

a) Company information - Status of bidder, registration certificate, and detailed write

up about bidder history.

- b) Details of Personnel Details of all key technical, commercial and service personnel.
- c) Details of Production capacity, location of factory involved in production of machinery etc.
- d) Details of financial information about company in the last 3 years, like turnover, copies of audited balance sheet etc.
- e) Copy of solvency certificate from banker.
- f) Details of service setup in India.
- g) Self certified letter about holiday listing / black listing in bidder letter head.
- h) If dealer / authorized channel partner / distributor etc. Manufacturer authorization letter.
- i) Copies of Purchase orders / contracts of similar supply made in the last 2 years and the performance certificate from the respective clients.
- j) The Bidder shall indicate the timelines necessary for supply / installation / commissioning of the items under Scope of Work.

#### Similar Work Experience Details:

SI. No.	Name of the work with location	Date & Ref. no of completion certificate (If available)	Date of start Cost of work	Reference document (Work Order/ Work Completion Certificate) to be attached, mention page no

**3.** Commercial: The Bidder may submit a Budgetary Estimate for all the items under the Scope of supply. The Budgetary Estimates shall be held confidential and will not be disclosed to other Bidders after the EOI responses are opened.

#### 5. <u>Other Terms</u>

#### Purchase of EOI Document

The Expression of Interest document shall be downloaded from Central Public Procurement Portal (CPPP) of Government of India website <u>http://eprocure.gov.in/epublish/app\_and CSIR-IHBT Website www.ihbt.res.in</u> free of cost.

#### **Clarifications on the EOI Document**

Any clarification in the EOI document may be sent in writing to the following through email:

Stores & Purchasee-mail <a href="mailto:spo@ihbt.res.in">spo@ihbt.res.in</a>

However, no extension of the time or date of EOI submitted will be provided on the ground that CSIR-IHBT has not responded to any query/clarification raised by any Bidder.

#### Amendment of Terms and Conditions of EOI

- CSIR-IHBT may at its discretion or as a result of a query, suggestion or comment of an Bidder, may modify the EOI document by issuing an amendment or a corrigendum at any time before opening the EOI. Any such Addendum or Corrigendum will be uploaded on CPPP Portal <u>http://eprocure.gov.in/epublish/app</u> and CSIR-IHBT's website and the same will be binding on all the Bidders, as the case may be.
- CSIR-IHBT at its discretion may extend the due date of submission of EOI and the decision of CSIR-IHBT in this respect would be final and binding on the respondents. In the event of changes in the time schedule, CSIR-IHBT shall notify the same only through its CSIR-IHBT website <u>www.ihbt.res.in</u>. Interested Bidders are advised tocheck the above website regularly for corrigendum / addendum, if any, which will bepublished only in the web site.
- No oral modification or interpretation of any provisions of this EOI shall be valid. Written communication shall be issued by CSIR-IHBT when changes, clarifications or amendments to the EOI document are deemed necessary by CSIR-IHBT at its sole discretion.
- EOI submission should be in English language. EOI response should be free from correction, over writing, erasures etc. Duly authorized representative of the Applicant shall sign on each page of the EOI documents. EOI documents should be prepared in such a way so as to provide a straight forward, concise description of Applicant and capabilities to satisfy the requirements of this EOI.
- If at any time during the examination, evaluation and comparison of EOI, CSIR- IHBT at its discretion can ask the Bidder for the clarification of its EOI. The request for clarification and the response shall be in writing. However, no post submission of EOI, clarification at the initiative of the Bidder shall be entertained.
- Canvassing by respondents in any form, including unsolicited letters on EOI submitted or post corrections shall render their EOI response liable for summarily rejection.
- The cost or charges incurred in preparation and submission of EOI response shall not be entitled by any respondent.
- Conditional offers will be summarily rejected. EOI which is found to be incomplete in content and / or attachments and / or authentication etc. is liable to be rejected.
- No Agent/Agents or third party/parties are engaged by CSIR-IHBT in this process.
- CSIR-IHBT is not responsible for any firm/agency expression or representing to express himself/herself/themselves to be the agent or third party representing CSIR-IHBT in this process.

It is advised to deal directly with CSIR-IHBT representative who is the signatory to this document. Disregard of any instruction may result in offer being ignored.

EOI that are incomplete in any respect or those that nor consistent with the requirements as specified in this document may be considered non-responsive and may be liable for

rejection and no further correspondence will be entertained with such Bidders.

All cost and expenses associated with submission of EOI shall be borne by the Bidder while submitting the EOI. CSIR-IHBT shall have no liability, in any manner in this regard, or if it decides to terminate the process of short listing for any reason whatsoever.

#### NON-COMMITTAL EOI.

After short listing of bidders at this EOI stage, the second stage bidding may not be restricted to short listed bidders only and CSIR – IHBT may resort to Open / Global Tendering for further participation by potential bidders. This may please be noted by all concerned.

Stores & Purchase Officer