



Date: 27/08/2021

INVITATION OF BIDS FOR GLOVEBOX INERT-GAS WORKSTATION

ENQUIRY NO: IITGOA/2021-22/029 DTD 27/08/2021

1. Quotations are invited in two bid system for the procurement of Glovebox Inert-Gas Workstation in separate envelopes. Please mention the above-mentioned title, enquiry number and due date for submission of bids on the sealed cover to avoid the bid being declared invalid.
2. The address and contact numbers for sending bids or seeking clarifications regarding this RFP are given below –

**Assistant Registrar
(Stores & Purchase)
IIT GOA, At GEC
Campus, Farmagudi,
Ponda – Goa. 403401
ar_sp@iitgoa.ac.in/ purchase@iitgoa.ac.in**

3. This bid enquiry is divided into three parts as follows:
 - a. Part I – Contains General Information such as the time, place of submission and opening of tenders, Validity period of tenders, etc.
 - b. Part II – Contains Instructions for the Bidders and essential details of the items/services required, such as the Schedule of Requirements (SOR), Technical Specifications, Delivery Period, Place of Delivery and Consignee details.
 - c. Part III – Contains Price Bid format, other details etc.
4. This bid enquiry is being issued with no financial commitment and the Institute reserves the right to change or vary any part thereof at any stage and to withdraw it at any stage.

भारतीय प्रौद्योगिकी संस्थान, गोवा

गोवा अभियांत्रिकी महाविद्यालय परिसर, फारमागुडी, फोण्डा - ४०३४०१, गोवा

Indian Institute of Technology Goa

Goa College of Engineering Campus, Farmagudi, Ponda - 403401, Goa



Part I – General information

Tender No.	IITGOA/2021-22/029		
Tender Date	27.08.2021		
Tender Category	Goods		
Tender Type	Open		
No. of Envelopes	2		
Covers Information / Submission of Bids			
Cover No.	Cover Type	Description	Document Type
1	Technical	Technical Specification, Tender Document, Schedule of Requirement and Compliance, Bidders Information/Indian Agent Information, PAC, Declaration of Local Content, Undertaking for Bid Security etc.	.pdf
2	Financial	Financial Bid	.pdf
<p>Two Bid System:</p> <p><input type="checkbox"/> The two-bid system will be followed for this tender. In this system bidder must submit their offer in separate sealed envelopes as – Technical Bid and Financial Bid.</p> <p><input type="checkbox"/> Separate technical bid and financial bid envelopes should be clearly marked as "Envelope No. 1 - Technical Bid" and "Envelope No. 2 - Financial Bid".</p> <p><input type="checkbox"/> Both these sealed covers are to be put in a bigger cover which should also be sealed and duly super scribed with our Tender No., Due Date and Name of the items quoted and to be submitted to the concern department/section mentioned in tender document.</p> <p><input type="checkbox"/> Bids should be forwarded by Bidders under their original memo / letter head inter alia furnishing details like GST number, Bank Details etc. and complete postal & e-mail address of their office.</p> <p>Note:</p> <ul style="list-style-type: none">• The technical offer should not contain any price information. If the price quoted is submitted in technical bid the tender will be rejected at the sole discretion of IIT Goa.• Initially Technical Bids will be opened and evaluated by the purchase committee. Financial Bid of only Technically qualified bidders will be opened later.• Contract/ Purchase Order will be awarded to the lowest bidder(L1) of Financial Bid among them.			
Form of Contract	Supply		

Bid Validity (Days):	120 days
Period of Work/Delivery Period (Days):	90 days
Pre-Bid Meeting Date & Time:	Will be decided on request
Pre-Bid Meeting Place & Address:	N/A
Modification and Withdrawal of Bids:	A prospective bidder who requires clarification regarding the contents of the bidding documents shall notify to the Buyer in writing about the clarifications sought not later than 7 (Seven) days prior to the date of opening of the Bids. Copies of the query and clarification by the purchaser will be sent to all prospective bidders who have participated the bidding documents.
Clarification regarding contents of the tender document/RFP:	A bidder may modify or withdraw his bid after submission provided that the written notice of modification or withdrawal is received by the Buyer prior to deadline prescribed for submission of bids. A withdrawal notice may be sent by email but it should be followed by a signed confirmation copy to be sent by post and such signed confirmation should reach the purchaser not later than the deadline for submission of bids. No bid shall be modified after the deadline for submission of bids. No bid may be withdrawn in the interval between the deadline for submission of bids and expiration of the period of bid validity specified. Withdrawal of a bid during this period will result in Bidder's forfeiture of bid security.
Rejection of bids:	Canvassing by the Bidder in any form, unsolicited letter and post-tender correction may invoke summary rejection with forfeiture of EMD. Conditional tenders will be rejected.
Unwillingness to quote:	Bidders unwilling to quote should ensure that intimation to this effect reaches before the due date and time of opening of the Bid, failing which the defaulting Bidder may be delisted for the given range of items as mentioned in this RFP.
Contract Type:	Tender
Delivery Location:	Indian Institute of Technology Goa Goa Engineering College Campus, Bhauasaheb Bandodkar Technical Education Complex, Veling, Farmagudi, Ponda, Goa
Pin Code:	403401
Bid Submission End Date/Date & Time Submission:	17.09.2021 at 17:00hrs
Place of Submission of Bid:	Stores & Purchase Department, IIT Goa, Admin Block, At GEC Campus, Farmagudi, Ponda, Goa-403401
Bid Opening Date & Time:	20.09.2021 at 15:00 hrs
Bid Opening Place:	IIT Goa, Admin Block, At GEC Campus, Farmagudi, Ponda, Goa-403401

Other Terms & Conditions:	As mentioned in technical specification
Technical Clarification:	Name: Dr. Santosh Kumar School of Physical Sciences IIT Goa Email: skumar@iitgoa.ac.in
Tender Inviting Authority:	Name: Assistant Registrar (S&P) Address: Stores& Purchase Department, Email: ar_sp@iitgoa.ac.in IIT Goa, Admin Block, At GEC Campus, Farmagudi, Ponda, Goa - 403401
Signing Authority:	Assistant Registrar (S&P)



Part II: Instructions to Bidders

1. **Schedule of Requirements** – List of items are attached as **Annexure ‘A’**
2. **Technical Details:** Technical details are attached in **Annexure ‘B’**
3. **Two-Bid System:** In respect of Two-bid system, Bidders are required to furnish clause by clause compliance of specifications bringing out clearly the deviations from specification, if any.

i) The Bidders are advised to submit the following documents along with Technical Bid–

- a) Compliance certificate in the following format;

Para of tender enquiry specification item-wise (As per annexure B)	Specification of Item offered	Compliance – whether YES/NO	In case of non-compliance, deviation to be specified in unambiguous terms

The offers must strictly be as per the specifications given in Annexure-A. At the same time, it must be kept in mind that mere copying of our specifications in the quotation shall not make the technical bid eligible for consideration. **A bid has to be supported with original catalogue (not of photo copy) of the quoted model duly signed by the OEM and the same must be sent along with the technical bid.** The quoted model should not become obsolete for a minimum period of 5 years (This is for the availability of spares). Therefore, the model quoted should invariably be highlighted in the leaflet/literature enclosed with the quotation. Non-compliance with above shall be treated as incomplete/ambiguous and the bid may be ignored without giving an opportunity to the bidder for further clarification/negotiation etc.

b) Bidders Information (Annexure C).

- c) A copy of Indian Agent Agreement / Authorization letter from OEM / OEMs along with tender to be submitted by All Indian Agents, if the manufacturer/supplier is based in abroad.
- d) GST and PAN details
- e) The Bidder should provide a list of customers of previous supply of a similar/ same range of equipment to IIT's/ NIT's/Universities with contact details.
- f) Kindly specify the percentage of Local Content and Country of Origin of goods being offered in your bid.

ii) The following documents should be submitted along with Financial Bid–

a) Price Bid. (Annexure D)

b) Previous order of supplies/Justification of quoted rates. (Annexure E)

4. **Delivery Period** – supply to be made within 90 days from the effective date of issuance of Purchase Order. Please note that P.O. can be cancelled unilaterally by the Institute in case items are not received within the delivery period. Extension of delivery period will be at the sole discretion of the Institute, with applicability of LD clause.

5. **Delivery and Transportation** - Place for supply / installation is ‘**Indian Institute of Technology Goa, Ponda – Goa**’.

Part III: Conditions of Contract

1. Award of Contract:

- i. IIT Goa shall award the contract to the technically qualified eligible BIDDER whose bid has been determined as the lowest evaluated financial bid.
- ii. If more than one BIDDER happens to quote the same lowest price, IIT Goa reserves the right to award the contract to more than one BIDDER or any BIDDER.

2. Prices:

For Import Supplies:

- i. It is mandatory to quote prices both in FOB basis and CIP Mumbai basis.
- ii. In case of multiple options of same product, bidders are requested to quote only one best option and not multiple options.

For Indigenous Supplies:

- i. It is mandatory to quote prices in INR- FOR, IIT Goa basis only.
- ii. In case of Multiple options of the same product, bidders are requested to quote only one best option and not multiple options.
- iii. The supplier shall pay and bear all other liabilities, taxes and duties not specifically agreed by the Purchaser in the contract.

3. Pre-installation:

- i. Please also mention the pre-installation requirements for the equipment like ambient temperature, humidity, civil work, weather specifications, power specifications, etc. When items are provided full performance satisfaction should be demonstrated.

4. Installation:

- i. Supplier shall be responsible for installation / demonstration wherever applicable and for after sales service during the warranty period and thereafter as mentioned in the contract.
- ii. Installation / demonstration to be arranged by the supplier free of cost and the same is to be done within 15 days of the arrival of the equipment at site.

5. Training:

- i. The supplier shall submit training proposal for the operation and maintenance to the personnel of IIT Goa on the offered equipment/machinery.
- ii. Wherever needed, our technical persons should be trained by the supplier at the project site free of cost. In case the person is to be trained at supplier's site abroad or in India it should be mentioned in the quotation clearly. The supplier should bear all the expenses for such training including 'to & fro' fares and lodging & boarding charges.

6. Terms of Payment:

- i. For foreign currency payments: 90% payment by letter of credit and balance 10% will be paid by wire transfer after satisfactory installation and commissioning.
- ii. For payments in INR: 100% within 30 days after the delivery and successful installation of the items at IIT Goa.

7. Legal Matter:

- i. All disputes are subject to Goa jurisdiction only.

8. Rights to Accept, Reject, Amend, Modify:

- i. The basic eligibility conditions and conditions of contract are broad guidelines for pre-qualification and the Director, IIT Goa hereby reserves the right to relax / alter / modify / add/delete any or all the conditions without notice.

9. Rights to Accept, Reject Bids:

- i. The Director, IIT Goa reserves the right to accept or reject any or all bids without assigning any reason in public interest.

10. Penalty/ Liquidated Damages:

- i. Timely delivery is essence of the contract and hence if any consignment be delayed, liquidated damages at the rate 0.5% of the price of the delayed consignment, for each week or part whereof shall be levied and recovered subject to maximum of 10% of total purchase order value.
- ii. IIT Goa reserves the right to cancel the order in case the delay is more than 6 weeks. Penalties if any will be recovered by forfeiting PBG at vendor's cost and risks.

11. Supervision of Erection and Commissioning:

- i. Successful BIDDER shall depute concerned specialist, for supervision of erection & commissioning of the machine to be carried out. The successful BIDDER shall make necessary arrangement at their own expenses for stay, transport and other expenses of their Specialist during their stay in Goa which also includes imparting free of cost training to IIT Goa personnel.

12. Performance Guarantee (GFR 2017 Rule 171):

- i. Performance Guarantee Bond is mandatory.
- ii. Successful tenderer/ bidder should submit performance guarantee as prescribed above to be sent to The Assistant Registrar, Stores & Purchase Department, IIT Goa on or before 15 days from the due date of issue of order acknowledgement. The PBG to be furnished in the form of bank guarantee as per proforma or annexure of the tender documents, for an amount covering 3 % of the purchase order value.
- iii. The Performance Guarantee should be established in favour of "The Registrar, IIT Goa".
- iv. PBG to be established through any of the National Banks (whether situated at Goa or outstation) with a clause to enforced the same on their local branch of Goa or any scheduled bank (other than national bank) situated at Goa. Bonds issued by co-operative banks will not be accepted.
- v. Performance Guarantee Bond shall be for the due and faithfully performance of the contract and shall remain binding, notwithstanding such variations, alterations for extensions of time as may be made, given, conceded or agreed to between the successful tenderer and the purchaser under the terms & conditions of acceptance to the tender.
- vi. The successful tenderer is entirely responsible for due performance of the contract in letter and spirit and all other documents referred to in the acceptance of tenders.
- vii. The PBG shall be kept valid during the period of contract and shall continue to be enforceable for a period of one year/two years (as mentioned in the tender document) or up to warranty period, plus 60 days whichever is later from the date of order acknowledge. In case PBG needs extensions up to warranty period then supplier shall initiate extensions to PBG one month prior to expiry of PBG.
- viii. For successful suppliers, if PBG is not submitted within 15 days from the date of Order Acknowledgement, then the Purchase Order will be cancelled with forfeiting of EMD.
- ix. **No interest shall be payable by the buyer to the Bidder on PBG.**

List of items required

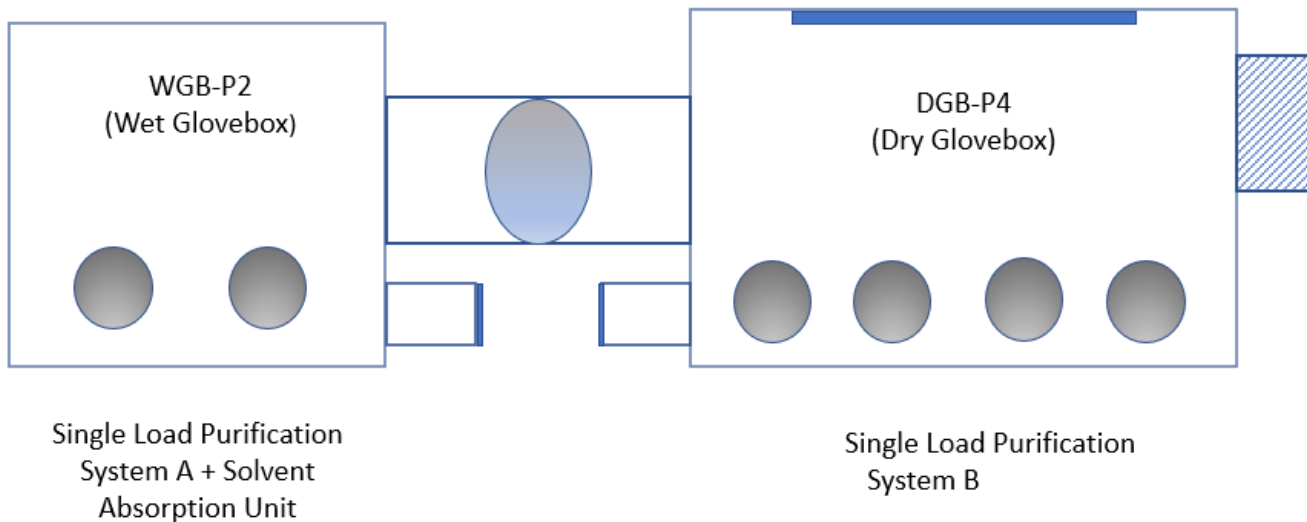
Sl. No.	Description of Items	Qty
1	Glovebox Inert-Gas Workstation	01

Specifications: Glovebox Inert-gas Workstation with Equipment/tools for Fabrication and characterization of semiconductor devices

A. Glovebox Workstation at a Glance:

1. This Six (6)-ports glovebox inert-gas workstation should provide moisture- (H₂O) and oxygen- (O₂) free inert environment (i.e., O₂ <1 ppm and H₂O <1 ppm) for fabrication and preliminary optical-characterization of the semiconductor devices (of 2D Materials and conventional semiconductor materials).
2. The whole workstation shall have Two independent working areas, namely Dry-area & Wet-area, which shall be connected with each other by an oversize T-shaped antechamber
3. Both the Wet-area and the Dry-area shall be capable of operating either in an Argon (Ar)-atmosphere or in a Nitrogen (N₂)-atmosphere.
4. Each glovebox shall have its own gas-purification system, and it shall offer an automatic pressure regulation.
5. Wet-area Glovebox (**WGB-P2**) workstation shall:
 - a. be a TWO (2)-ports glovebox workstation,
 - b. be compatible for handling/processing the chemicals (for substrate cleaning and wet-etching of the substrates) and polymers (photoresist, ebeam-resist, PDMS, PMMA, MMA, PMGI, LOR) required for fabrication of the semiconductor devices,
 - c. be equipped with an inert-atmosphere compatible spin-coating unit,
 - d. be equipped with an inert-atmosphere compatible heater-cum-magnetic stirrer plate,
 - e. be equipped with a low-volume (<2L) ultrasonic bath which is compatible with an inert-atmosphere and with solvents like, IPA, Acetone, Xylene, Kerosene, etc.
 - f. equipped with blanked KF/CF flanges, and flanges with feedthroughs (see detailed specifications section for types & required quantities)
 - g. equipped with a Gas Purification System,
 - h. equipped with a solvent vapor removal system,
 - i. equipped with an over-size blanked KF/CF flange (of diameter >150 mm) for connecting it, e.g., with a vacuum chamber/suitcase, at a later stage of the development,
 - j. connected with an over-size “T” antechamber
 - k. equipped with a mini-antechamber
6. Dry-area Glovebox (**DGB-P4**) workstation shall:
 - a. be a FOUR (4)-ports glovebox workstation,
 - b. be equipped with sufficient numbers of feedthroughs for placing a table-top Reactive Ion Etching (RIE) System inside the glovebox; IIT Goa will purchase an RIE system through a separate tendering process,
 - c. equipped with a gas purification system,
 - d. have an extra strengthen base-structure for sustaining the heavy weight of the RIE system,
 - e. be integrated with an air-conditioning unit on the roof of the glovebox for providing a temperature-controlled environment to the equipment placed inside the glovebox,
 - f. have a modified (a cutout & clearance holes for screws) right-wall/panel for integrating a Rapid Thermal Processing (RTP) system from outside the glovebox via an airtight connection, (an appropriate flange will be provided by the supplier of an RTP system). IIT Goa will procure an RTP system through a separate tendering process.
 - g. have a transparent back-side wall of appropriate dimension and with an appropriate mechanical design for holding a computer monitor (>32-inch) behind this transparent wall,
 - h. be equipped with blanked KF/CF flanges, and flanges with feedthroughs (see detailed specifications section for types & required quantities),
 - i. be equipped with a removable (e.g., using a bayonet type adapter) antechamber on the left-side,

7. OEM or bidder shall provide the technical details and the pricing information of a mini-glovebox, with the same adapter, which can be connected with the vacuum chambers (e.g., deposition chamber or load-lock chamber) placed elsewhere for transferring the samples from the glovebox-workstation to the vacuum chambers and vice-versa.
8. The whole setup shall be as per the below diagram:



B. Common Specifications of the Glovebox Inert Gas Workstation:

Technical requirements:

1. Leak rate of each workstation shall be <0.05 Vol %/h (Class-I glovebox according to International Standards ISO 10648-2). A certificate, showing the ppm levels of both O_2 and H_2O measured every 5 min. over a period of a month or longer, shall be provided.
2. A single dry scroll vacuum pump of a pumping capacity not less than of $12 \text{ m}^3/\text{h}$ shall be connected to all the vacuum chambers using appropriate numbers of valves and the SS piping. The pump shall be connected with an appropriate vacuum gauge to measure the ultimate pressure that can be achieved using this pump.
3. Working environment: Nitrogen or Argon.
4. Each glovebox shall have an inert-gas gun with spiral tubes for blowing off the solvent/contaminants from the sample's surfaces.
5. Real modular glovebox with dismountable side-panels to facilitate the possible future upgradation. The tightness of side walls/panels shall be secured through 'gasket' so that (i) large size equipment can be placed inside the gloveboxes by removing these walls/panels, or (ii) a new glovebox can be sandwiched between the existing ones or (iii) a new glovebox can simply be connected from the sides (left or right).
6. The workstation shall be made out of Stainless steel SS304L with wall/panel thickness of min. 3 mm.
7. The workstation shall be operable in both over (positive)/under (negative)-pressure modes, up to ± 10 mbar.
8. Automatic pressure regulation with no need of any manual intervention providing comfortable Glovebox operation i.e., the pressure regulation of the Glove box must be independent of vacuum pump & foot pedal. The dry-vacuum-pump shall be used for doing the vacuum cycles only.
9. Auto switched-off function for vacuum-pump when vacuum chamber(s) are not being used.
10. Pressure Control Red Light warning according to O_2 & H_2O values.
11. Equipped with safety valve with HEPA filter for automatic mechanical discharge of exceeded gases in the glove box.
12. Excess gas discharge should be possible even in case of power break for safety regulations.
13. The system shall not require Heat Exchanger & Chiller
14. Each Workstation box shall be supported by 304L Stainless steel frames and with casters and height adjustable feet.

15. All piping must be in stainless steel (SS304L).
16. Front panel shall be sapphire-coated Polycarbonate of 10 mm thickness, mounted at 10-degree inclination.
17. Glove rings shall be of Ø220 mm equipped with a double groove for a reinforced support of the gloves.
18. Gloves shall be made of Ambidextrous BHP butyl gloves with a thickness of 0.4 mm. Other types of chemically resistant glove's options shall be quoted as **optional** items.
19. Each box needs to be provided with POM Door (Glove Port Cover) which shall be used to plug the glove port during the changing/replacing the gloves (Total Qty = 02 Nos).
20. Each Glovebox Workstation shall have a provision of mounting a few height-adjustable Stainless-Steel shelves. Pricing of the each such self shall be provided in the **optional** items.
21. LED lighting system from the roof of the Glovebox of standard GU10 with ON/OFF switch.
22. Low noise level of less than 50 dB (A) during the purification and pressure regulation processes.
23. At any given point, vacuum pump shall not be connected to Glovebox for pressure regulation & it shall be used only for Antechamber Vacuum Cycle operation.
24. Each glovebox shall have a provision for a body-earth connection (both inside and outside).

Other requirements:

25. The bidder or OEM shall provide the technical details and pricing information of all the optional items mentioned in this enquiry.
26. As far as possible, the itemized pricing of the components of the glovebox workstation shall be provided.
27. Attach the technical papers, if known, where users have fabricated sample/devices in your Glovebox
28. Must provide a general package of common system spare parts and their pricing information.
29. On-site installation & integration of the RIE and RTP Systems in the glovebox workstation shall be performed in complete co-ordination and co-operation of the Glovebox and Systems vendors and the customers.
30. The performance of the wet-area glovebox shall be demonstrated on the site by performing some of the wet-process like cleaning the samples in organic solvents, spin-coating of photoresist/ebeam resist, some standard acid etchings, etc. IIT Goa will provide all these chemicals/polymers.
31. It shall have an EMO (Emergency OFF) protection and vacuum/pressure safety interlocks.
32. Detailed training of operation and all functionalities shall be provided to the users.
33. Detailed manuals for the complete workstation shall be provided.
34. Detailed pre-installation requirement for the glovebox workstation and ancillary requirements like electrical/gases etc. shall be provided.

Warranty:

35. Shall provide a comprehensive warranty for 3 years from the date of installation/demonstration. The cost of the warranty extensions shall be quoted in the optional items.

Customer/service support:

36. The bidder must provide the details of a local customer service centre. If a bidder/OEM participating from abroad then they must address the questions/concerns of the customer within 24 hrs on the working days of the week.

User's list:

37. The bidder shall provide a list of users in universities and institutes in India where the similar Glovebox workstation have been installed and are currently fully-functional. The bidder shall also provide a list of users in universities and institutes in India or in the world where they have integrated similar equipment (like RIE and RTP) in their gloveboxes.

Delivery and installation:

38. The delivery and installation of the system at IIT Goa site shall be completed within **90 days** of an opening date of an irrevocable letter of credit.

C. Detailed Specifications: Wet-area Glovebox (WGB-P2) workstation: Argon atmosphere

Sl.No	Particular	Technical Specifications
1	Design & Construction	<ul style="list-style-type: none"> Internal dimension: Length 1100 mm to 1250mm; Depth 700 mm to 750mm; Height 850 mm to 950mm UV protection panel on front panel UV protection also for the LED lighting system; shall ensure appropriate visibility inside the glovebox for handling the tools/samples Right wall/panel of the wet glovebox shall be connected with an oversize "T" vacuum chamber It shall have a mini-antechamber on the right wall/panel
2	Gloves Ports	<ul style="list-style-type: none"> TWO (2) glove ports Inert Gas Workstation
3	'T' Shaped Vacuum chamber	<ul style="list-style-type: none"> Dimension: 800 mm x 600 mm (L x D) of MOC stainless steel (SS304L) with SS Sliding Tray Leak rate 10^{-5} mbar l/s or better, fitted with analog vacuum gauge (-1 to +1 bar range or wider) which may read both positive and negative pressure Evacuation and Refilling – Automatic with freely user configurable vacuum cycle time in HMI. Must also be equipped with a 3-way valve to control filling and vacuum Door Closing & opening mechanism– Easy opening through gas cylinder. Gas cylinder external to the glove box for a maintenance without pollution of the atmosphere
4	Fixed Mini-antechamber	<ul style="list-style-type: none"> It shall be a <i>fixed</i> (flanged/welded) antechamber Dimensions: 150 (D) x 300 (L) mm Mounted on right wall/panel of the Glovebox with a 3-way valve for controlling the gas filling/vacuum pumping Shall have an appropriate vacuum gauge for measuring both over/under pressure It shall have a sliding SS304L tray It shall have a hinged-type door with a 180-deg. opening Leak rate 10^{-5} mbar l/s or better

5	Gas Purification System	<ul style="list-style-type: none"> • Single line PLC controlled closed-loop recirculating Gas Purification system using (1) copper catalyst to remove oxygen to a level of <1 PPM O₂, and (2) molecular sieve to remove moisture to a level of <1 PPM H₂O environment inside the glove box • Controlling – Through PLC-HMI touch-panel interface or PLC-PC interface • System shall have at least 12 kg of purification load (6 Kg copper catalyst & 6 Kg Molecular sieves for purification capacity of 45L for O₂ & 1440 g for H₂O, respectively) • Automatic regeneration Sequence with N₂ or Ar (5-10%) controlled through a PLC hardware • Data Recording – The unit shall have capability to record up to two (2) months history of O₂, H₂O, and pressure/pressure difference, • A 7-inch HMI shall be provided to display/control the glovebox pressure, oxygen (O₂) level, moisture (H₂O) etc. both in Digital or Graphical mode and also it shall be used to do the other controlling functions such as Regeneration, Auto Flush Mode, Set points for Alarm etc. • Activation of Inert Gas Flushing depending on the setpoint of O₂ & moisture (H₂O) value and setpoint freely configurable between (10 to 1000 ppm) • Able to provide alarm upon exceeding setpoints of oxygen (O₂) or moisture (H₂O). • Two HEPA 13 Filters shall be provided at the Inlet and outlet ports of the Glovebox • Optional remote monitoring option on the PC using Wi-Fi/Ethernet
6	Circulation Unit	<ul style="list-style-type: none"> • Automated Variable flow from 30 m³/h to 120 m³/h, • Blower speed to be freely configurable on HMI in the range of 0 to 100% with a step size of 2% or less, • Recirculation blower type: brushless motor mounted inside a SS housing, • Bidder shall mention the values of max. over (positive)-pressure and under (negative)-pressure that can be achieved in the glovebox. The minimum requirement is up to ±10 mbar over/under pressure,
7	Solvent vapor removal system	<ul style="list-style-type: none"> • A solvent vapor removal system of load of min. 1.5 Kg with solvent absorbing material such as Activated Charcoal is to be integrated with the Wet-area workstation only
8	Oxygen Analyzer	<p>Galvanic Cell based Oxygen Sensor Two wired, loop powered, 4-20 mA transmitter microprocessor based with Local Display</p> <ul style="list-style-type: none"> • Measuring scale: In ppm or % • Measuring range: 0-1000 ppm • Resolution: 1 ppm or better • Precision: +/- 1 ppm of the 0-10ppm scale • To be mounted in dynamic flow condition and with isolation valves which facilitates the removal of the sensors for maintenance without affecting the functioning of Glovebox.

		<ul style="list-style-type: none"> • CE Marked with calibration / Test certificate traceable to International Standard
9	Moisture Analyzer	<ul style="list-style-type: none"> • H₂O Sensor type – Ceramic Sensor • Measuring scale: -100 to 20 deg. C DP (i.e., 0 – 1000 ppm) • Precision: +/-2 °C DP (or 1 ppm) • Measuring unit – In °C DP or ppm • Resolution: 1 ppm or better • Sensors to be mounted in dynamic flow condition and with isolation valves which facilitates the removal of the sensors for maintenance without affecting the functioning of Glovebox. • CE Marked with calibration / Test certificate traceable to International Standard.
10	Vacuum Pump	<ul style="list-style-type: none"> • A high-performance Low noise (< 47dBA), compact scroll dry pump with min. pumping speed of 12 m³/h for antechamber evacuation operations. Electrical Motor is in accordance with major international Standards (UL, CSA, CE) with operating voltage of 200 to 240 VAC 50/60Hz. Flange Connection DN25 ISO-KF and with RS485 I/O Interface • Pump shall reach an ultimate pressure of 10⁻² mbar or better • The pump shall be connected with an appropriate vacuum gauge to measure the ultimate pressure that can be achieved using this pump.
11	Feedthroughs for Wet-area workstation	<ul style="list-style-type: none"> • All the following feedthrough shall be on the back wall/panel • 2 x leak-tight electrical feedthrough Bi + T 220V • 2 x blanked leak-tight NW40 feedthroughs at the back side • 1 x Double ball-valve Feedthrough on NW40 • 1 x USB 3.0 Feedthrough • 1 x RJ45 Cat6 feedthrough • 2 x Isolated BNC 50-Ohm Feedthroughs • 1 x 4 Bananas dia. 4mm sockets on a single feedthrough • Itemized prices of all these feedthroughs shall be provided.
12	Spin coater	<ul style="list-style-type: none"> • Inert-atmosphere compatible stand-alone spin-coater which can be placed anywhere in the glovebox. Protection rating IP52 or better. • Detachable interface/control-unit with a full-size glovebox's glove touch-sensitive touch-screen. • If possible then this detachable interface/control-unit shall be placed outside of the glovebox using one of the gland feedthroughs. The bidder shall confirm this possibility. If not possible then it shall appropriate length connecting wires to place the detachable interface away from the main unit and anywhere in the glovebox. • Interface/control-unit shall be made out of the chemically resistant materials • Housing shall be made of natural polypropylene (NPP) • Process chamber shall be made of high chemical resistant polytetrafluoroethylene (PTFE)

		<ul style="list-style-type: none"> • Shall be compatible to spin-coat the common photoresist, common e-beam resist, and other chemicals (polymers/monomers) like PDMS, PMMA, MMA, PMGI, LOR, etc. • TWO liner sets made of polyethylene terephthalate (PET) shall be provided • Shall have durable hinges to secure the opened lid at a stable position for easy access of the chamber. Shall have an electromagnetic safety lid lock • Shall have a provision to upgrade with a Foot switch at a later stage • Dimension Approx. 400-500 mm D x 275mm W x 250-500mm H • Digitally controlled motor with digital incremental speed signal feedback • Unlimited program storage for recipe with multiple steps / each for • Time 0.1 to 99999 sec / step or higher • Spinning speed max. up to 12,000 rpm or higher with an accuracy of ± 0.1 rpm or better. The max. acceleration shall be 30, 000 rpm/sec or higher. • Rotation Direction (CW, CCW, Puddling) • Programmable RPM, Time, Acceleration, No. of steps, rotation • Max Substrate sizes: Diameter: 6-inch (150mm) or 4-inch x 4-inch Square • Min substrate size: 10mm x 10mm • Appropriate vacuum chucks and fragment adapters shall be provided to spin coat the samples of different sizes mentioned above • Power input: 200 to 240VAC, 50 Hz. Appropriate plug for Indian socket • Power consumption shall be mentioned • Shall include a dry vacuum-pump (and all associated piping) for holding the substrate at the spinning head • Shall have a provision of inert gas (Argon/N2) purging • Shall have a provision of a syringe holder for dispensing the chemical
13	Stirrer with heater and temperature sensor	<ul style="list-style-type: none"> • It shall be a magnetic stirrer with a heating capability. • It shall have a digital display for displaying both the stirrer's speed and the temperature. • The stirrer speed shall be controllable and in the range of 100 to 1400 RPM or a wider range • Speed accuracy of stirrer: +/- 2% or better • Temperature Range: 50 - 300 deg. C or wider • Temperature Accuracy: +/- 1deg. C or better (both with or without temperature sensor) • It shall have PID integrated so that precise heating shall be done with a minimal temperature overshooting. • Max Stirring Capacity: 20L • Protection Class: IP42 or higher

		<ul style="list-style-type: none"> • It shall have an adjustable safety circuit feature • Heating Power: 500 - 1000 W • Power supply: 220 - 240V, 50Hz • External Temp Sensor: Pt1000 (sensor shall be provided) • Plate Diameter : 100 - 150mm • The top surface of the heating-cum-stirrer plate shall be smooth and flat so that the whole substrate or pieces of substrate can make a proper thermal contact. • Plate Material: chemically resistant and scratch-proof materials like Silumin with a ceramic coating
14	Ultrasonic bath with heater	<ul style="list-style-type: none"> • Shall be a low-volume (1.5 - 3L) ultrasonic bath, • Shall be compatible with inert-atmosphere (like Ar and N₂) and with bath solvents like, IPA, Acetone, Xylene, Kerosene, etc. • Shall have a 30 - 50 kHz rugged industrial transducer • Shall have a digital timer with setting up to 99 minutes • Shall be capable of heating the bath volume up to 65 deg. C • Shall have programmable features: light/heavy load, high/low power, degassing mode, sleep mode • Inner dimensions of the bath shall be larger than 4-inch • Protection Class: IP32 or higher • Power supply: 220 - 240V, 50Hz • Shall come with a mesh basket

D. Detailed Specifications: Dry-area Glovebox workstation (DGB-P4): Nitrogen atmosphere

Sl.No	Particular	Technical Specifications
1	Design & Construction	<ul style="list-style-type: none"> • Internal dimension: Length 1750 mm to 1850mm; Depth 700 mm to 750 mm; Height 850 mm to 950 mm • Special reinforced frame to handle the equipment (RIE) load • Transparent Window of PC Sapphire coated at the rear panel of Glovebox for viewing 32" Monitor (Monitor Scope shall be of IIT-Goa) mounted externally on a 'U' Clamp attached to Glovebox • Integrated with an Air-Conditioning unit on roof of the glovebox for controlling the temperature inside the glovebox • Annealing (RTP) system interface (e.g., an appropriate dimension cut on the right wall/panel with a few through holes for screws) • Dry glovebox shall be connected on the right-side of an oversize "T" vacuum chamber. • It shall have a mini-antechamber on the left wall/panel
2	Gloves Ports	<ul style="list-style-type: none"> • Four (4) Glove Ports Workstation
3	Gas Purification System	<ul style="list-style-type: none"> • Same as wet-area workstation
4	Circulation Unit	<ul style="list-style-type: none"> • Same as wet-area workstation
5	Oxygen Analyzer	<ul style="list-style-type: none"> • Same as wet-area workstation

6	Moisture Analyser	<ul style="list-style-type: none"> • Same as wet-area workstation
7	<i>Removable</i> Mini-antechamber	<ul style="list-style-type: none"> • It shall be a <i>removable & mountable</i> to other gloveboxes equipped with suitable adapters. • Dimensions: 150 (D) x 300 (L) mm • Shall be mountable on a suitable adapter (e.g., bayonet) fitted on left wall/panel of the Dry-area glovebox (DGB-P4) • It shall have a sliding SS304L tray • It shall have a hinged-type door with a 180-deg. opening • Leak rate 10^{-5} mbar l/s or better
8	Feedthroughs	<ul style="list-style-type: none"> • All the following feedthrough shall be on the back wall/panel • 2 x leak-tight electrical feedthroughs Bi + T 220V • 2 x Isolated BNC 50-Ohm Feedthroughs • 4 x Gland Feedthroughs for diameter 4.6 to 16mm Cables • 1 x USB 3.0 Feedthrough • 1 x RJ45 Cat6 feedthrough • 1 x 4 Bananas dia. 4mm sockets on a single feedthrough • 2 x UV grade AR-coated fused silica viewports on 40 mm flanges <ul style="list-style-type: none"> ○ 1 x AR-coating in the range of 450 – 750 nm ○ 1 x AR-coating in the range of 575 nm – 1075 nm • 1 x gland or hermetically-sealed triple optical fibers feedthrough <ul style="list-style-type: none"> ○ Inside and outside connectors: FC/APC, 2 mm Narrow Key, single-mode patch cables ○ Jacket: 3 mm diameter PVC Furcation Tubing ○ Fiber types: 2 x SM600, 1 x 780HP ○ The separate pricings for gland and hermetically-sealed fiber feedthrough shall be given • 2 x double ball-valves feedthrough on NW40 for gases inlet connections for 1/4" OD/SWL fittings • 1 x double ball-valve feedthroughs on NW40 for water inlet and outlet connections for Rc 1/4" fittings • 2 x blanked leak-tight NW40 feedthroughs; One line will be used for connecting the vacuum port of the RIE system inside the glovebox with the vacuum pump placed outside the glovebox. The feedthroughs shall have provisions to connect the SS vacuum hoses on both inside and outside the glovebox. • All these feedthroughs shall be on the back wall/panel • Itemized prices of all these feedthroughs shall be provided

(To be printed on letterhead of the bidder)

Annexure - C

Bidders Information

1.	Name of the Bidder	
2.	Address of the Bidder	
3.	PAN No.	
4.	GSTN No.	
5.	State of GST Registration	
6.	E-mail	
7.	Contact Person's Name & Designation	
8.	Mobile No.	

Indian Agent's Information

1.	Name of Indian Agent	
2.	Address of Indian Agent	
3.	Indian Agent PAN No.	
4.	Indian Agent GSTN No.	
5.	State of GST Registration	
6.	E-mail	
7.	Contact Person's Name & Designation	
8.	Mobile No.	

(To be printed on letterhead of the bidder)

Annexure - D

PRICE BID FORMAT

S.No.	Item description & short specification	HSN Code/SAC Code	Qty in Units	GST %	Price Basis	Total Bid Price
1.	Glovebox Inert-Gas Workstation					
6.	Installation and Commissioning Charges (if any, quote in INR)					
7.	Agency Commission (if any, quote in %)					
8.	Other Charges (if any, please specify)					
Grand Total						

#HSN Code: "Harmonized System of Nomenclature Code No." and SAC Code: "Service Accounting Codes Code No."

1. Delivery Mode: Delivery at IIT Goa, at site only.

2. Validity of the bid: 120 days from the date of submission of quotation/tender.

Signature.....

Name

Place:

Company Name & Address:

Date:

Affix Rubber Stamp:

Note: Price Bid should be submitted in given format only. For additional information/extra items above format may be typed and used.

Reasonability of Prices

Please quote best minimum prices applicable for a premier Educational and Research Institution. The party must give details of at least two purchase orders identical or similar equipment, supplied to any IITS/Research Institutions/ other organisation as per below Format (to be enclosed in Financial Bid) along with the final price paid and details are mandatory.

Previous Supply Orders

Name of the Firm _____

S.No.	PO No. & Date	Description & Quantity of ordered equipment	Value of Order	Date of completion of delivery as per contract	Remarks indicating reasons for late delivery, if any and justification of price difference of their supply order & those quoted to us	Has the equipment being installed satisfactorily (attach a certificate from the Purchaser/ Consigner)	Contact Person along with Telephone no., Fax No. and e-mail address

Place: _____

Date: _____

Signature and Seal of the Manufacturer / Bidder

FORMAT FOR PERFORMANCE GUARANTEE BOND

(To be typed on **Non-judicial stamp paper** of the value of **Indian Rupees of One Hundred**) (TO BE ESTABLISHED THROUGH ANY OF THE NATIONAL BANKS (WHETHER SITUATED AT GOA OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT GOA OR ANY SCHEDULED BANK SITUATED AT GOA. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT ACCEPTED.

To,
The Registrar,
Indian Institute of Technology, Goa
Farmagudi, Ponda,
Goa – 403401

LETTER OF GUARANTEE

WHEREAS Indian Institute of Technology, Goa (Buyer) have invited Tenders vide Tender No..... Dt. for purchase of

AND

WHEREAS the said tender document requires that any eligible successful tenderer (seller) wishing to supply the equipment / machinery, etc. in response thereto shall establish an irrevocable Performance Guarantee Bond in favour of “**Registrar, Indian Institute of Technology, Goa**” in the form of Bank Guarantee for Rs (**3% (three percent) of the purchase value**) and valid till **one year or up to warranty period plus sixty days whichever is later** from the date of issue of Performance Guarantee Bond may be submitted within 15 (Fifteen) days from the date of Order Acknowledgment as a successful bidder.

NOW THIS BANK HEREBY GUARANTEES that in the event of the said tenderer (seller) failing to abide by any of the conditions referred in tender document / purchase order / performance of the equipment / machinery, etc. this Bank shall pay to Indian Institute of Technology, Goa on demand and without protest or demur Rs..... (Rupees).

This Bank further agrees that the decision of Indian Institute of Technology, Goa (Buyer) as to whether the said Tenderer (Seller) has committed a breach of any of the conditions referred in tender document / purchase order shall be final and binding.

We, (name of the Bank & branch) hereby further agree that the Guarantee herein contained shall not be affected by any change in the constitution of the Tenderer (Seller) and/ or Indian Institute of Technology, Goa (Buyer).

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed Rs. (Indian Rupees..... only).
2. This Bank Guarantee shall be valid up to (date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if IIT Goa serve upon us a written claim or demand on or before(date).
4. This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at situated at (Address of local branch).

Date:

Yours truly,
Signature and seal of the Guarantor:
Name of Bank:

Instruction to Bank: Bank should note that on expiry of Bond Period, the Original Bond will not be returned to the Bank. Bank is requested to take appropriate necessary action on or after expiry of bond period.

UNDERTAKING FOR BID SECURITY
(To be issued by the bidder on company's
letterhead in lieu of EMD)

To,
The Registrar,
Indian Institute of Technology Goa,
At GEC Campus, Farmagudi, Ponda – Goa

We, M/s (name of the firm), with ref. to
enquiry no. dtd hereby undertake that:

- 1) We accept all the terms and conditions of the tender document.
- 2) We accept that, we will not modify our bid during the bid validity period, submit performance guarantee within the stipulated period and honor the contract after award of contract.
- 3) In the event of any modification to our bid by us or failure on our part to honor the contract after final award or failure to submit performance guarantee, our firm may be debarred from participation in any tender/contract notified by Indian Institute of Technology, Goa for a period of one year.

Yours faithfully,
(Signature of the bidder with date and seal)

DECLARATION OF LOCAL CONTENT

(To be given on company letter head - For tender value below Rs.10 crores)
(To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for
tender value above Rs.10 crores)

Date:

To,
The Registrar,
Indian Institute of Technology Goa,
At GEC Campus, Farmagudi, Ponda -

Goa Sub: Declaration of Local content

Tender Reference No: _____

Name of Tender: - _____

Country of Origin of Goods being

_____ offered: We hereby declare that an item offered has % local content.

“Local Content” means the amount of value added in India which shall, be the total value of the item being offered minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

We understand that, as per Office Memorandum dated 04/03/2021 issued by Ministry of Commerce and Industry, services such as transportation, insurance, installation, commissioning, training and after sales support like AMC/CMC etc. are not considered as local value addition.

“*False declaration will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.”

Yours faithfully,
(Signature of the Bidder, with Official Seal)