

TECHNICAL BID PROFORMA

Item Name: "GLOVE BOX"

Bidder Eligibility Criteria:

1.0	Bidder Eligibility Criteria-I (Public Procurement – Preference to Make in India)	Class I / Class II	Local Content value	Reference, Page No.
I	Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P45021/2/2017-PP (BE II) dated 16 th September 2020 and other subsequent orders issued therein.			
2.0	Bidder Eligibility Criteria-II	Compliance (Yes/No)	Reference Page No.	Remarks, If any
1	Purchase order copies of at least 3 installations in India in reputed institutions (IITs, IISc, and Govt. laboratories) in the last 5 years should be provided. These installations should be of a similar make and model to the Glove box. Contact person Name, Email Id., Phone no. & Institution Name should be provided of the quoted model for the glove box tools & should be attached along with the technical specifications.			

3.0 Technical Compliance:

We need a glove box that acts as a controlled atmosphere (dry boxes) or for use with hazardous materials and handling of hygroscopic materials. Glove Boxes provide a leak-tight environment for work with contamination-sensitive materials. It should have a Controlled Atmosphere of < 1 ppm of O₂ (oxygen) and < 1 ppm of moisture.

S.no		Features	Complied/not complied	Reference pg no
1	Enclosure	1.1. The working space of each glove box should be at least 850 - 890 mm in height, 1700 to 1850 mm in length and 750 mm to 800 in depth		
		1.2. The window materials should be impactresistant polycarbonate that is at least 10 mm thick.		
		1.3. Main body must be SS304 or SS316 brushed stainless steel, at least 2.5 mm thick.		
		1.4. The trays, rails and other components in the ante-chambers should also be of 304 grade or 316 grade or similar corrosion/chemical resistant grades of brushed stainless steel.		
		1.5. The external should either be powder coated or Spray paint finish		
		1.6. We strongly prefer a system in which the space underneath the glove box is empty.		

		1.7. Need a modular system that can be expanded further. The side panels must be removable to accommodate future expansions.		
		1.8. Glove Ports: Natural white/PP		
		1.9. There must be a lamp inside, preferably LED. There must be a switch on the outside of the body or touchscreen to turn the light on/off.		
		1.10. At least two height-adjustable stainlesssteel shelves of at least 1000 mm in length and at least 200 mm in depth should be provided. These should be centrally located so that any chemicals or tools are accessible from glove ports.		
2	Programmatic Logic Control	2.1. Glove box should be controllable with independent and fully integrated programmatic logic control (PLC), with a touch panel interface		
		2.2. The touch panel interface should serve as a central control unit for all glove box functions and procedures.		
		2.3. All glove box functions should be accessible via the touch panel.		
		2.4. Graphical display of the box pressure, O2 and moisture levels should be available in the touch panel interface.		
		2.5. Automatic Box purge should be possible via PLC.		
		2.6. PLC should trigger an automatic box purge either due to high O2 or moisture or both in the glove box or an automatic timer option to trigger box purge at a pre-set time for a pre-set duration		
		2.7. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided.		
		2.8. Gas (argon or nitrogen) flow rate of 200 liter/min or greater during purging should be possible.		
		2.9. The O ₂ and moisture trigger set-point range for automatic box purging should be between 10999 ppm. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided.		
3	Purifier	3.1. Single Column Gas purification system with touch screen HMI, remote and graphical PLC controller with Auto-regeneration		

		3.2. Glove box should have at least one independent purifier capable of purifying the glove box ambient to attain a purity of <1 ppm H ₂ O and O ₂ .		
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		3.3. The removable capacity should be a minimum of 41 -45 liters for oxygen and at least 1400 to 1600 grams for moisture. Specification sheets or data sheets attesting to this must be provided.		
		3.4. The purifier should be fully regenerable with an automatic/programmed control using forming gas (10% H ₂ or lower) or Ar or N ₂ .		
		3.5. The gas circulation blower should be capable of a circulation rate of at least 88 to 100 m ³ /hour. The maximum and minimum circulation rates of the blower should be provided and should work without any heat exchanger.		
		3.6. The blower speed should be dynamically controlled via program logic based on the moisture and oxygen content in the glove box, to make the blower operation power efficient. Implementation diagrams or specifications that prove this is possible must be provided.		
		3.7. The purifier loop must have at least two H14 dust filters (HEPA or ULPA filters) -- one for filtering inlet gas (nitrogen or argon) and one for filtering the box ambient before it goes out to the gas circulation system.		
		3.8. Oil bubblers should NOT be used in any of the gas circulation lines. The mechanism for pressure regulation should be clearly mentioned.		
		3.9. NO component in the gas circulation line (except for the vacuum pumps) should use oil or oil containing parts.		
		3.10. Eco Mode Operation function		
		Automated Activation : Yes/No		
		Time of Day for Automated activation: HH:MM:SS		
		Blower Speed Reduction: Yes/NO		
		Reduced speed set: option with between 10100%		
		Max. H ₂ O/O ₂ at set RPM reduction: such as 10 PPM		
		Switch Off Vacuum pump purifier: Yes/No		
		Switch off Vacuum pumps antechambers: Yes/NO		
		Stopping time for Vacuum pumps: ---- Minutes		

		Switch off Box-light: Yes/No		
		Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided		
		3.11. Auto purge with time sequence or ppm		

		O ₂ and H ₂ O Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided.		
4	Sensors	4.1. A solid-state/Electrochemical oxygen sensor capable of measuring oxygen levels from minimum of 0.1 ppm to 1000 ppm should be provided with box.		
		4.2. A solid-state moisture sensor capable of measuring moisture levels from minimum of 0.1 ppm to 3000 ppm should be provided with box.		
5	Box pressure	5.1. Box pressure should be controllable automatically (via programmatic logic) within a pressure range of -15 to +15 mbar.		
		5.2. The desired pressure should be settable via the touch panel interface. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided.		
		5.3. The circulation system should make it possible to have positive pressure regulation without vacuum pump		
		5.4. A foot pedal for controlling box pressure should be provided.		
		5.5. 20 m ³ /h rotary vane vacuum pump with oil mist filter.		
6	Gloves and Glove Port Covers	6.1. There should be 4 POM (polypropylene is preferred) glove ports for each box and butyl gloves should be provided for these glove ports.		
		6.2. The size of each glove port should be at least 9" in diameter		
		6.3. The glove ports should be O-ring sealed against the gloves.		
		6.4. Must include at least one glove port cover.		
		6.5. The thickness of the butyl gloves should be a minimum of 0.4 mm		
7	Automatic Large Antechamber	7.1. The box must have one large ante-chamber for sample transfer.		
		7.2. The ante-chamber should be cylindrical with a diameter of at least 400 mm and a length of at ~600 mm.		

		7.3. The doors should preferably be with a swing-type hydraulic-assisted opening mechanism to conserve working space.		
		7.4. There should also be a tray preferably mounted on telescopic rails, which can be slid back and forth. The tray should facilitate transfer for tools and chemicals.		
		7.5. The chamber must have an Automatic PLC controlled evacuate and purge system with pressure gauge.		
8	Mini antechambers	8.1. The box must have one mini ante-chamber for sample transfer.		
		8.2. The ante-chamber should be at least 150 mm in diameter and 400 mm in length.		
		8.3. The ante-chamber should have a tray to enable sample transfer.		
		8.4. The chamber must have a manual pump and purge system: with pressure gauge, manual valve and connection to vacuum pump.		
		8.5. The ante-chamber should have a door that can seal the ante-chamber for evacuation.		
9	Feedthroughs	9.1. The box should have at least 4 KF-40 feedthroughs. These can be connected to liquid, electrical or vacuum feedthroughs. The details of placement can be discussed at the time of ordering		
		9.2. The system must have at least 1 electrical feedthrough with 15 A connector that are compatible with 220 V – 240 V supply.		
10	Other requirements	<input type="checkbox"/> All electrical connections should comply with line power specifications in India. Single phase voltage range is 220-240 Vac and the three-phase voltage range is 415 - 440 Vac. The line frequency is 50Hz. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Acceptance tests	<input type="checkbox"/> IIT Madras will expect acceptance tests, post installation. These can be recorded in the presence of representatives of the OEM. The inability to pass these tests will be counted as a technical failure and breach of contract. <input type="checkbox"/>		
		<input type="checkbox"/> IIT Madras has complete rights technically reject or accept based on user feedback and reference. <input type="checkbox"/>		
		<input type="checkbox"/> Maintain <1 ppm of H2O and O2 for 24-hour period. <input type="checkbox"/>		
		<input type="checkbox"/> Demonstrate automated routines for catalyst regeneration. <input type="checkbox"/>		
		<input type="checkbox"/> Demonstrate automated routines for maintaining target pressure. <input type="checkbox"/>		

Additional Terms and conditions			
1	Warranty-3 Years		
2	AMC-2 Years-Optional(Will not be considered for price evaluation)		
3	Training-2 Days for Operation		

(Note: It is mandatory for the bidders to provide the compliance statement in tabular column format along with catalogue page number (comply/not comply) for the above points with document proof as required. Failing which bidders will be technically disqualified)

**SIGNATURE OF BIDDER ALONG WITH
SEAL OF THE COMPANY WITH DATE**