Glove box Specifications

S.No	Specification	Description
1	Glove box	• **Internal dimensions (mm):** 1200 (W) x 900 (H) x 750 (D) (± 5%) • **Material of construction:** Stainless steel • **Thickness (mm):** 3-4 • **Environment:** Nitrogen, Argon & Helium • **Performance:** H_2O < 1ppm, O_2 < 1 ppm
2	Box operating pressure	• Between +15 mbar to -15 mbar, automatic adjustment with PLC and instant adjustment using foot pedal or any appropriate mechanism. Details should be provided.
3	Front view window/glass	• **Type:** Scratch and chemical resistant glass or appropriate material, details should be provided • **Thickness (mm):** 8-10 (± 10%)
4	Shelves	Minimum 3 height adjustable, full length stainless steel shelves
5	Feed through (leak proof)	• **Electrical:** Minimum 1, with minimum 1 outlet power strip • **Extra:** Minimum two blanked ISO KF 40 or One blanked KF-40 flange & one 3/8 inch stainless steel swage lock bulk head fitting
6	Filters	• 0.1-0.5 micron HEPA inlet/outlet filters (class H13 or better)
7	Main Anti chamber	• **Total:** One • **Material of construction:** stainless steel • **Door sealing mechanism:** Spindle lock/ Gas piston type or appropriate • **Dimensions (mm):** Diameter 300 (± 5%) • **Length:** 600 (± 5%) • Vacuum better than 0.4-0.6 mbar or flow volume 10-15 m^3/hr
8	Tray	Should consist of an stainless steel sliding tray, details should be provided
9	Mini Antechamber	• **Total:** One • **Material of construction:** stainless steel • **Dimensions (mm):** Diameter 150 (± 5%) • **Length:** 300 (± 5%) • Vacuum better than 0.4-0.6 mbar or flow volume 10-15 m^3/hr
10	Glove ports	• **Total:** Two • **Port material:** Chemical resistant material details should be provided • **Diameter:** 200 mm (± 10%), • **Sealing:** O ring sealed
11	Gloves	• **Material:** Chemical resistant Butyl or any appropriate, details should be provided • **Thickness:** 0.4-0.6 mm (± 10%) • **Size:** medium or large
12	Vacuum pump	• **Type:** Rotary vane mechanical pump or better with necessary moisture and vapour traps for vacuum pump, details should be provided • Vacuum better than 0.3-0.5 mbar or flow volume 10-15 m^3/hr
13	Flow piping and fittings	Should be made of stainless steel
14	Electrical	• **Lighting:** Internal LED light assembly/ fluorescent lamp • **Operating voltage:** 230 V (±10 %), 50 Hz
15	Control system	PLC controlled of all basic functions & monitoring of box parameters with 6 inch (± 10%) monochrome/colour panel. Details of PLC and functioning should be provided.
16	Oxygen probes/analyzers	• **Measuring range:** 0-1000 ppm (± 10%) • **Accuracy:** +/- 1ppm in full range. • **Repeatability:** +/- 1% in full range • **Resolution:** +/- 0.1% in full range • **Probe/ analyzer type to be provided** • **In-house calibration procedures to be provided**

17	Moisture probes/analyzers	• **Measuring range:** 0-500 ppm (± 10%) • **Accuracy:** +/- 2 ºC DP • Probe/ analyzer type to be provided
18	Regeneration	Automatic regeneration of purifier through PLC control or appropriate procedure, details to be provided
19	Purifier unit	• **Capacity: Oxygen: minimum 30L (±10%) and Moisture (H_2O): minimum 1300 g (±10%)** • Should consist of purification columns, details should be provided • Should have appropriate filters or arrangement for vapour removal, details should be provided • Details of quantity of molecular sieve and copper catalyst in the reactor should be provided • Should preferably have easy fill and replacement ports required for replacement of catalyst
20	Stand	Should consist a stand with locking and levelling casters
21	Blower	• **Should consist of fixed speed/ single stage or appropriate blower. Blower type and its capacity to be provided** • **Chiller to be provided if required to cool the blower**
22	Valves	Preferably should have the following valves • **Main Purifier valve:** Electro-pneumatic, KF-40 or any suitable • **Control valves:** Electromagnetic (solenoid) or any suitable • **Antechamber valves:** Manual KF-25 Valves or any suitable • **Manual valves:** Swagelok Ball valves or any suitable
23	Power	240 ± 10 V, 50 Hz, details of receptacle/socket to be provided
24	Guarantee/ Warranty	• The entire equipment should be guaranteed for a period of 1 year from the date of commissioning. • AMC charges for 3 years beyond the warranty period of 1 years should be quoted
25	Qualification Criteria & Other Aspects	• The vendor should have supplied minimum two systems in India and details should be furnished. • Should have agents in India to provide after sales service, support and maintenance • Photographs and catalogues related to machine should be enclosed in the offer • **Dimensions of equipment, weight and space requirements should be submitted in technical offer.** • Installation & Commissioning should be carried out at BHEL R&D. Pre-installation requirements should be furnished • Two hard copies of all the operational manuals related to the system have to be provided **while supplying the system**.
26	Training	Training should be provided for the system operation and maintenance
27	Compliance Statement	Compliance statement of specification to be submitted along with the offer.
28	Spares	Price of essential spares and consumables should be provided
29	Technical & Commercial bid submission	1. Technical offer with all catalogues should be provided 2. Compliance statement meeting the specification line by line should be provided 3. **Commercial bid with terms and conditions to be submitted in a separate sealed cover**

A. After the system delivery to BHEL R & D, if the system is installed in existing R & D building and later if it has to be shifted to the new building (Center for Nanotechnology and Applications) this has to be done by the supplier

B. Delivery: Preferably the equipment should be delivered within 3-4 months from the date of placement of purchase order

Note: All covers should be clearly marked indicating the contents and should be SEALED.