Specifications for the liquid helium plant with purifier and recovery

Tenders are invited for a liquid helium plant that can produce liquid helium at a minimum rate of 36 liters/day. This should be integrated with a helium purifier and a full high pressure helium recovery system. Installation of the entire facility with construction of the recovery-lines to the labs and testing will have to be done by the vendor.

Required specifications:

Please use the given format for your response on the technical specifications; any other format may be rejected.

1. **Liquefier**

	Items/Parameters	**Desired range/features**	**Vendor's remarks**
1.	Liquefaction rate	Minimum 18 liters/day per liquefier (2 such liquefiers required)	
2.	Storage dewar	a. **Capacity:** Minimum 150 liter. b. The dewar should be mounted in a dolly set-up for easy movement. c. **Total height including the dolly and castor wheel:** should be preferably less than or equal to 6 feet. d. Should be equipped with appropriate pressure regulating and safety devices. e. An appropriate liquid helium transfer line should be provided. The size of this should be such that liquid helium transfers from the supplied storage dewar can be performed in a room with 8.5 feet ceiling clearance.	
3.	Control system	a. The control system should be fully automated. b. Should be equipped with liquid helium level sensor with an electronic level monitor. c. Should be equipped with pressure monitor and neck heater. d. It will be preferred if a digital helium gas mass flow meter and totalizer is provided. e. High pressure and low-pressure precision regulators should be provided.	

		f. Control software should be provided. Internet enabled monitor and control will be preferred. g. All the thermometers used should be calibrated and integrated with the control system.	
4.	Electrical power	The system should operate at AC 210 V @ 50 Hz. Power consumption at steady state should not be more than 10 kVA.	

2. Recovery system

	Items/parameters	**Desired range/features**	**Vendor's remarks**
1.	Type	High pressure recovery	
2.	Storage bag	a. Minimum capacity: 8 m^3 b. Operating temperature: Preferably between -20^{0}C to 60^{0}C or better	
3.	Helium compressor (high pressure)	a. Maximum operating pressure: should be higher than 2300 PSIG b. Flow-rate capacity: more than 5 SCFM will be preferred. Lower will also be considered. c. Input pressure range: should be higher than 1.3 PSIG. d. Power consumption: should be less than 6 kW. e. Cooling: air-cooled preferred.	
4.	Purifier	a. The purifier should require minimum maintenance and consumables (like LN2). b. Purity of the output gas should be 99.99% or better. c. Control should be automated. d. Ethernet-based monitoring facility will be preferred.	
5.	Additional (should be quoted with details)	a. Recovery controller. b. Electronic back pressure controller.	

3. General

	Item	**Description**	**Vendor's remarks**
1.	Delivery time	Should not be more than 6 months after placing the order.	
2.	Installation	Should be done by the vendor.	
3.	Service	a. Cost for comprehensive	

		maintenance service for 5 years (beyond regular warranty) should be included in the quotation. This should include the maintenance of the entire recovery line. b. The vendor must have at least one trained service engineer based in India who can be contacted for emergency and regular maintenance. Name, affiliation and contact phone number of the engineer must be provided.	
4.	Recovery line	The plant will be located outside the research labs. The maximum distance between the plant and the research labs will be less than 50 meter (this will be roughly same as the total length of the recovery line). The recovery line should include a flow meter and appropriate valves for each cryostat. Total four cryostats will have to be connected to the recovery line. The piping should be done with high quality copper pipes. All the joining, welding and leak testing will have to be done by the vendor at the site. The vendor must quote for the installation of the entire recovery line between the helium plant and the research labs.	

Important note: The specifications mentioned above must be fulfilled in order to qualify. The final selection will be based on total points earned (by the qualified vendors) out of 100. Maximum points that can be earned on technical and financial grounds are 40 and 60 respectively. The details are given below:

1. **Liquefaction rate (max. 10 points):** The vendor providing highest liquefaction rate will earn 10 points. Others will earn points relative to that.
2. **Ethernet-based monitoring for the liquefier (max. 3 points):** If the vendor provides this feature for the liquefier, they will earn 3 points. Otherwise 0 points.
3. **Ethernet-based monitoring for the purifier (max. 2 points):** If the vendor provides this feature for the liquefier, they will earn 2 points. Otherwise 0 points.
4. **Power consumption (max. 10 points):** For lowest total power consumption, the vendor will earn 10 points and others will earn points relative to that.

5. **Mass flow meter (max. 3 points):** For providing a digital helium gas mass flow meter and totalizer with the control system, the vendor will earn 3 points. Otherwise, 0 points.
6. **Design and size (max. 7 points):** Points will be given based on the space requirement and slick designs. The vendors must provide the details of the entire system including the total footprint and dimensions of all the parts. For lowest space requirement, the vendor will earn 5 points and for the most slick and convenient design of the dewar-assembly with dolly, the vendor will earn 2 points. Others will get points on a relative basis. Whether the design is convenient or not will be decided by a specially constituted purchase committee for the purchase of the helium plant.
7. **Technical presentation and additional unique features (max. 5 points):** The qualified vendors on technical ground will be invited to give presentation of the system in front of the purchase committee. 5 points will be awarded for the best presentation and for offering additional unique features. Others will earn points on a relative basis.
8. **Price (max. 60 points):** The vendor quoting the lowest price will earn 60 points and others will earn points on a relative basis.

Please send hard copies of your quotation in two parts in two separate sealed envelopes (mailing address is provided at the end of this message). The first part (Part A) should contain only the technical data and the second part (Part B) should provide the financial details and the price offered. The envelopes should be properly labelled as "Part A: LHe plant (Technical)" and "Part B: LHe plant (Financial)". The two sealed envelopes can be packed together inside another bigger sealed envelope for mailing. The quotation can be rejected without opening Part B if the technical aspects in Part A is not satisfactory and as per the requirements.

The hard copies should be sent to:

Assistant Registrar (S&P)
Indian Institute of Science Education and Research, Mohali
Sector 81, SAS Nagar
Mohali, Punjab
India
PIN: 140306

The last date for receiving sealed envelopes (both "Part A" and "Part B") is 06/02/2013. The sealed envelopes should reach before 1 pm on 06/02/2013. The technical bids envelopes will be opened at 3 pm on 06.02.2013. If you are sending by courier please confirm with the courier company that they can deliver on time to the right address.