



Society for Innovation & Development  
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### Annexure B:

#### Request for quote and specifications of MOCVD reactor regenerable purifiers for hydrogen, nitrogen and ammonia

- The GEECI (Gallium Nitride Ecosystem Enabling Centre and Incubator) at SID-Indian Institute of Science is seeking bids from qualified industries for a three purifiers for nitrogen, hydrogen and ammonia
- Companies need to submit two bids, a technical bid and a commercial bid, in two separate sealed envelopes. The bids should be submitted no later than 21 days from the date of posting of this tender, as listed on the website date/time stamp, and by 5 pm on the 21st day or next weekday in case the 21st day falls on a weekend or a national holiday.
- Both technical and commercial bids should be addressed to "The Chief Executive, SID, IISc, Bangalore 560012."
- The envelopes should be addressed to "Prof. Srinivasan Raghavan, CeNSE, IISc, Bangalore, 560012" and submitted to the office at CeNSE, IISc in Room No. GF 15 between 9 am and 5 pm.
- All questions regarding this tender should be addressed to Prof. Srinivasan Raghavan at the email address [sraghavan@iisc.ac.in](mailto:sraghavan@iisc.ac.in)
- Post such submission all vendors should send an email to [sraghavan@iisc.ac.in](mailto:sraghavan@iisc.ac.in) with the subject line: "GEECI\_Bidder's name\_Tool Name" to intimate him of the submission within one day.
- Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee.
- The equipment sought will be placed at the Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc). IISc is India's No. 1 institution on higher learning and the Center for Nano Science and Engineering is home to one of the best academic fabs in the world.
- The technical response, corresponding to the tool being offered, should be in the form of a compliance table with at least 5 columns. Serial number in column 1. Each of the numbered technical items below should be addressed in a separate row of the table in column 2. Compliance to this requirement, in Yes/No, deviation from it and justification should be provided in the neighboring columns 3-5. Post the opening of a hard copy of the technical bid the committee will request for a soft copy of the files for further processing. Companies should NOT mail soft copies of the files unless specifically requested for.
  - Detailed technical specifications of the tool being offered should be included.
  - Any additional capabilities or technical details, that you would like to bring to the attention of the purchase committee, can be listed at the end of the technical table.
  - If multiple systems can fulfill the requirements, vendors can submit multiple bids.
  - Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors.
  - The commercial bid should be broken up to the maximum extent possible into separate items with a cost against each to enable better comparison of price for various configurations across the bidders. As an option, please provide itemized cost for any suggested accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.



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1. Please submit three separate quotes, one each for hydrogen, nitrogen and ammonia.
  2. The quotes should be split into a line item indicating the base price and then each optional item should be listed separately with its pricing.
  3. All 3 purifiers should be regenerable.
  4. The hydrogen purifier should be capable of handling flow rates of up to 300 slpm of hydrogen
  5. The nitrogen purifier should be capable of handling flow rates of up to 300 slpm of nitrogen
  6. The ammonia purifier should be capable of handling up to 75 slpm of ammonia.
  7. The purifier processes should be automated and there should be a HMI that indicates the status of the purifier and allows control
  8. The technical bid should contain details of all alarms and interlocks that are built in into the purifier
  9. The purifiers should be enclosed in a metal enclosure with the HMI visible from outside.
  10. The quote should include as an option isolation valves on the inlet and outlet.
  11. The quote should include as an option a purifier bypass
  12. The quote should include as an option a 0.003 micron particle filter on the outlet
  13. Quote should include **as an option** the cost of shipping the system and locating it **AT THE SITE** specified by the client. This includes the final mile transfer from the airport or dock to the site. IISc will provide documents for customs clearance.
  14. The technical bid should include details of utilities required – power, water, gases and vacuum- for the stable operation of the purifier.
  15. **SEMI Standards:** The technical bid should include details of the SEMI standards the purifier confirms to.
8. **Online support:** System should have the capability for online diagnostics from a remote location in case of tool problems.
  9. **Post sales service and Indian Presence:** Bidders should provide details of after sales service and support available in India. If not India, the nearest geographical location should be specified. Please provide details of the number of trained personnel in India who can service the machine, the number of tools sold in India and the corresponding number in the southern region or in Bangalore.
  10. **Payment Terms and Conditions:** On all systems the payment terms should be specified in the technical and commercial proposal and is subject to negotiation.
  11. Bidder shall have to submit audited accounts of financial year 2017-18, 2018-19 and 2019-20. Audited statement must be signed and stamped by qualified chartered accountant. Income Tax return for assessment year – 2017-18, 2018-19 and 2019-20.
  12. **References:** Bidders should provide details of other locations in India with similar tool installations.
  13. **References:** Bidders should provide details of at least 3 other locations globally where similar tool installations have been deployed for device fabrication in a clean room preferably for production purposes.
  14. **III-V nitride processing:** Please include information on whether the tool and its fixturing has been used for deposition of the said metals on GaN on Si wafers of 6" diameter for power applications.