



Indian Institute of Technology Kanpur

National Center for Flexible Electronics

Tender Document For

Up-gradation (including Design, supply, Installation, Commissioning, Testing & Validation) of SPECIALTY GAS LINE DISTRIBUTION SYSTEM for the utilities of NCFlexE cleanroom & laboratory, at IIT Kanpur.

Enquiry number: SCDT/FLEXE/2018-19/02

Opening Date: 21/05/2018

Closing Date: 31/05/2018

National Center for Flexible Electronics, IIT Kanpur invite sealed single quotation from MED GAS N EQUIPMENT for up-gradation of **the utilities in NCFlexE cleanroom & laboratory, at IIT Kanpur.** with given specifications:

Note: Bidder is requested to send **“Technical bid (Including unpriced item wise BOQ) and price bid (Including item wise pricing BOQ)”** submitted together in separately sealed envelopes. The BIDS shall be based on the technical specifications as given in this document.

Mandatory Information for bidders to follow:

1. It is mandatory for the bidder to read all the points, instructions and details given in the tender document.
2. It is mandatory for the bidder to make a technical Presentation at the premises of National centre for Flexible Electronics, IIT Kanpur. If failed to make Technical Presentation the offer by the bidder is liable to be rejected at the discretion of National Centre for Flexible electronics.
3. Bidders are required to deposit bid security amount of Rs 1 Lakh as earnest money in the form of Demand Draft in the only duly endorsed in favor of Director, IIT Kanpur. Earnest money should be enclosed in a separate sealed envelope and tender documents should be enclosed in an envelope super scribed “Earnest Money- Name of work “Item Rate-Tender-Name of Work” on the top of envelope. At the time of opening of tender earnest money envelope will be opened first and in case earnest money is not found in the requisite or amount envelope containing item rate tender of the party concerned shall be opened and will be summarily rejected.
4. Bidder include in their Bid prices any and all costs associated in respect to the place of delivery, including but not limited to the delivery, unloading, insurance, storage, assistance in the actual customs clearance process, and loading of relevant cargo.
5. All the pages/documents to be duly signed and stamped by the authorized signatory.
6. Maximum educational discounts should be applied, Please mention educational discount specifically.
7. Bidder must indicate installation and cables & connectors charges specifically, if applicable.
8. It is mandatory for the bidder to submit the cabling plan along with room sizes at the time of tender submission, if applicable.
9. Visit by prospective bidder for the Physical inspection/ verification of the site before submitting bid is mandatory.

Technical specification for SPECIALTY GAS DISTRIBUTION SYSTEM:

Modification in the existing gas cabinet and pipe lines for spatiality gases

Scope of the work

Change of Gas Panel – 5% SiH₄ in Helium, NH₃, Cl₂, BCl₃

Includes the following replacement / amendment with usage of existing / new components. All components being used should be of SS316L Electropolished, with no more than 0.1 microns roughness. Metal seal fitting ends or Orbital welding should be used for the completion of Gas panels.

Supply gas panel should comprise of the following

- Stainless steel plate to mount components. Primary regulator with inlet and outlet pressure gauges to provide appropriate flow rates and pressure, diaphragm valves, pressure relief valve, check valves etc. of semiconductor industry accepted make.
- System should automatically shut off in the event of detection of gas leak.
- Check valves for protection from back streaming of gas.
- Line filters between regulator and cylinder of 0.5 microns and 0.003 microns.
- Provision of High Pressure Vent and Low Pressure Vent along with Diaphragm Isolation valve.

Gas Cabinet for storing 2 nos. 10 / 47 / 50 ltr. w.c. gas cylinders.

- Gas Cabinet fabrication should be of cold rolled steel of 11 mm gauge with powder coating and lacquer coating.
- Suitable for storage and supply of toxic, flammable or corrosive gases.
- Should have provision to fix the Gas panels indicated at sr. no. 1 above
- Cabinets to have connections for exhaust ducts for continuous ventilation.
- Key operated, self-latching doors to disable unauthorized access.
- Safety glass viewing windows.
- Adjustable cylinder shelf for small cylinders installment. Perforation in the cylinder shelf to provide proper air circulation around the cylinder.
- Cylinder restraints to ensure that all cylinders are securely held in place during operation and storage.
- Neoprene gaskets around door to ensure a positive seal.

Change of Gas lines from single walled to Coaxial line for 5% SiH₄ in He/NH₃/Cl₂

- Length of each line from the Gas cabinet to the Equipment is approx. 15- 20 mtrs.
- Existing single walled gas lines to be changed with Coaxial line. The Outer tube of the Coaxial line should be Vacuum sealed fitted with a Vacuum gauge indicating the condition of the inner tube. In the event of breakage of the Vacuum, audible sound should be raised with the Provision to be made to purge the line in the event of leakage.
- Tubes and valves for high purity gases should be of SS316L Electropolished, with no more than 0.1 microns roughness. The tube would be SS316L electropolished except the coaxial outer tube with dual layer of packing done in clean room. All the fittings and isolation valves would be SS 316L electropolished. Lines would be completed using Orbital welding and usage of relevant channels and clamps like Unistrut type. After installation the gas lines would be purged with Nitrogen gas and Pressure decay testing would be done and Certificate for the same is to be issued.

Change of Gas lines from Single walled to Heated line for BCl₃

- Length of each line from the Gas cabinet to the Equipment is approx. 15- 20 mtrs.
- Existing single walled gas lines to be changed with heated line. Tubes and valves for high purity gases should be of SS316L Electropolished, with no more than 0.1 microns roughness. The tube would be SS316L electropolished except the coaxial outer tube with dual layer of packing done in clean room. All the fittings and isolation valves would be SS 316L electropolished. Lines would be completed using Orbital welding and usage of relevant channels and clamps like Unistrut type. After installation the gas lines would be purged with Nitrogen gas and Pressure decay testing would be done and Certificate for the same is to be issued. The gas line is to

be heated to a temperature of 40-45OC uniformly across the length and should cut off automatically after attaining the set temperature.

Helium Leak Testing for all the Gas lines indicated at sr. no. 3&4

Valve Manifold Box

- VMB fabrication should be of cold rolled steel of 11 mm gauge with powder coating and lacquer coating.
- Suitable for toxic, flammable or corrosive gases.
- Should have provision to fix the SS plate comprising of 4 nos. Diaphragm valves
- VMB to have connections for exhaust ducts for continuous ventilation.
- The diaphragm valves used should be of SS316L Electropolished, with no more than 0.1 microns roughness
- Metal seal fitting ends or Orbital welding should be used for the components of VMB.

BOQ for tendering process

Change of Gas Panel/ gas supply line in the existing gas cabinet installed with PECVD and RIE system in SCDT for – 5% SiH4 in Helium, NH3, Cl2, BCl3 gases.(Details can be provide by email)

- Stainless steel plate to mount components. Primary regulator with inlet and outlet pressure gauges to provide appropriate flow rates and pressure, diaphragm valves, pressure relief valve, check valves etc. of semiconductor industry accepted make.
- Line filters between regulator and cylinder of 0.5 microns and 0.003 microns.
- Length of the tubes will be approx. 50 meters
- The tube would be SS316L electropolished except the coaxial outer tube with dual layer of packing done in clean room. All the fittings and isolation valves would be SS 316L electropolished
- Metal seal fitting ends or Orbital welding should be used for the completion of Gas panels.
- All the fittings should be VCR fittings.

Deliverables along with Technical offer by Vendor

- 1) Technical BOQ with unpriced bid and priced bid separately
- 2) Unpriced bid and priced bid will be kept separately in a sealed envelop
- 3) BOQ has to be made as per our conceptual drawing and technical specification given in the tender
- 4) Estimated pipe length is mentioned if require.
- 5) Relevant catalogues & technical Specifications of the proposed makes are given in the BOQ. Only preferred makes indicated by IITK are acceptable.
- 6) Any additional item required to meet the specialty gases line specifications may be added as optional & duly signed by the designated executive (permanent employee) of the Vendor with name, Designation & seal of the Vendor Company on each page.
- 7) Vendor Organization Structure
- 8) Project Implementation Organization Structure if awarded

Any other documents as required for fulfilling the Technical Requirements may be attached

Terms & Conditions for the tender

1. Evaluation will be done on the basis of technical specifications as well as mandatory criteria.
2. Price bid will be opened only, when bidder is comply with all the technical specification, mandatory criteria as per tender notice.
3. Payment shall be regulated as under
 - a.) 50% of the tendered rate against material delivery.
 - b.) 30% of the tendered rate upon completion of work.
 - c.) 20% of the tendered rate on validation & running of utilities specialty gases line.
4. Warranty/Guarantee should be clearly mentioned. The Warranty must start from the date of successful commissioning at IITK.
5. Conditions for work:-
 - a) All chase cuttings in the wall, for recessed conduits & boxes and drilling the holes shall be done with power operated machines only if require. No chase shall be allowed to be cut manually with the use of hammer & chisel.
 - b) All cuttings in cement plaster and brick shall be made good by using cement mortar 1:3 (1 part cement, 3 part coarse sand), if require.
 - c) The cut surfaces shall be repaired by an experienced mason only so as to match the repaired plaster with the original, if require.
 - d) All such repaired surfaces shall be cured for 3 to 4 days to keep the surfaces wet, using water spray machine (hand/motor operated) and avoid unnecessary flooding of the area, if require.
6. Validity of bid should be at least for 90 days from the closing date of tender.
7. Works Inspection and Testing of Equipment:
 - a) Prior to dispatch of equipment the Institute reserves the right to inspect the same at the manufacturer's works and the contractor shall provide and secure every reasonable access and facility at the manufacturers works for inspection, for witness of all acceptance and routine tests as per relevant Indian Standards. Contractor shall give a reasonable notice of about 15 days for the purpose of test, and witness of all major equipment's.
 - b) Pre-commissioning test: All routine tests shall be carried out on the gas lines, exhaust, generation plants such as DIW, N2, and CDA. Protective & measuring devices should be checked for calibration.
8. The delivery period should be specifically stated. Earlier delivery may be preferred.
9. The penalty @1% per week or part thereof subject to max 10% of the delivery price will be deducted from the balance payment, if supply, installation, testing, commissioning is not completed within permitted period.
10. The IITK reserves the right to accept or reject any Bid, and to annul, in whole or in part, or to suspend the bidding process and reject all Bids at any time and without reason prior to award, without thereby incurring any liability to the affected Bidder or Bidders.
11. The company/organization shall make his own arrangements for accommodation for his/her staff etc. and no claim for the temporary accommodation from the company/organization shall be entertained.
12. The several documents, forming the rules/regulations, are to be taken as mutually explanatory of one another and in case of ambiguities or discrepancies the same shall be explained and adjusted by the In-Charge who shall thereupon issue to the supplier its interpretation directing in what manner the work is to be carried out.
13. The drawings etc. shall remain in the custody of the Institute. The supplier shall study the drawings thoroughly before the commencement of work. In case of any discrepancy, the supplier shall seek clarification before proceeding with the works.
14. The supplier shall give adequate notice in writing to the Engineer-in-charge of any further drawings or specifications that may be required for the execution of the works or otherwise under the contract.

15. Canvassing in connection with tenders is prohibited and the tenders, submitted by the tenderers who resort to canvassing, are liable for rejection.
16. Bidder shall have to attach signed declaration and if the declaration is not found to represent a true statement of facts the contract is liable to be cancelled, earnest money forfeited and the bidders shall have no claim on the Institute.
17. Bidder is not allowed to make additions and alterations in the tender document. Any additions and alternations, if incorporated in the tender, shall be at the tender's risk since the modified tender is liable for rejection.
18. Conditional tenders violated of the spirit and the scope or the terms & conditions of the tender, are liable to be rejected without assigning any reasons. Tenders with any form of rebate shall be rejected summarily.
19. GST/Tax on work contract as per prevailing notification of Govt of India
20. The earnest money of the unsuccessful bidder will be refunded on written request, within 1 (one) month of the award of work. The earnest money of the successful tenderer shall however be adjusted towards the performance security deposit.
21. Tenderer should only submit his/her tender if he/she considers himself/herself eligible in possession of all the documents required.
22. The tender must be submitted with the all mandatory documents asked in tender.
23. Intending tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderers shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The tenderers shall be responsible for arranging and maintaining at his own cost all materials, tools, & plants, water, electricity access, facilities for workers, and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work and local conditions and other factors having a bearing on the execution of the work.
24. The competent authority on behalf of the Board of Governors, IIT Kanpur does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderers shall be summarily rejected.
25. The competent authority on behalf of Board of Governors, IIT, Kanpur reserves to himself the right of accepting the whole or any part of the tender and the tenderers shall be bound to perform the same at the rate quoted.
26. Tenderer must provide future maintenance and services & support with warranty for a period of minimum 1 year. All the generation plants such as N2, CDA, and DI water must have one year additional warranty in addition to the turnkey project of utility.

Kindly send the quotation in sealed envelope latest by 3:00PM dated 31/05/2018 to the following address;

To,
Prof. Siddhartha Panda
Room No. 305,
Samtel Center for Display Technologies (SCDT)
Indian Institute of Technology Kanpur,
Kanpur-208016, Uttar Pradesh, India