

Tender for “Gas line connection and Gas leak detectors configuration for RIE tool by Indian supplier only”.

This is an RFQ (Request for Quote) for **Supply, installation, modification, testing and commissioning of specialty Gas lines from Valve manifold box to tool at NNFC** as part of a limited tender for the Centre for Nano Science and Engineering (CeNSE.) at Indian Institute of science (IISc.) Bengaluru.

CeNSE is a multidisciplinary research department at IISc that houses a 14,000 sq. ft. cleanroom and characterization facility used by 50 faculty members from various disciplines at IISc. CeNSE also runs a nationwide program which has allowed 4200 participants from more than 700 universities and institutes all over India to use the facilities at CeNSE. Consequently, any utility/facility at CeNSE receives significant exposure to scientific community at IISc and beyond. The vendors are kindly requested to factor in the value of this exposure in to their quotes. Details of existing facilities and INUP program can be gleaned from:

<http://nnfc.cense.iisc.ac.in/>

Facility/Site

National Nano Fabrication Center is a 14,000 sq. ft. cleanroom with class 100 and class 1000 where semiconductor devices and fabricated. The facility has the following equipment.

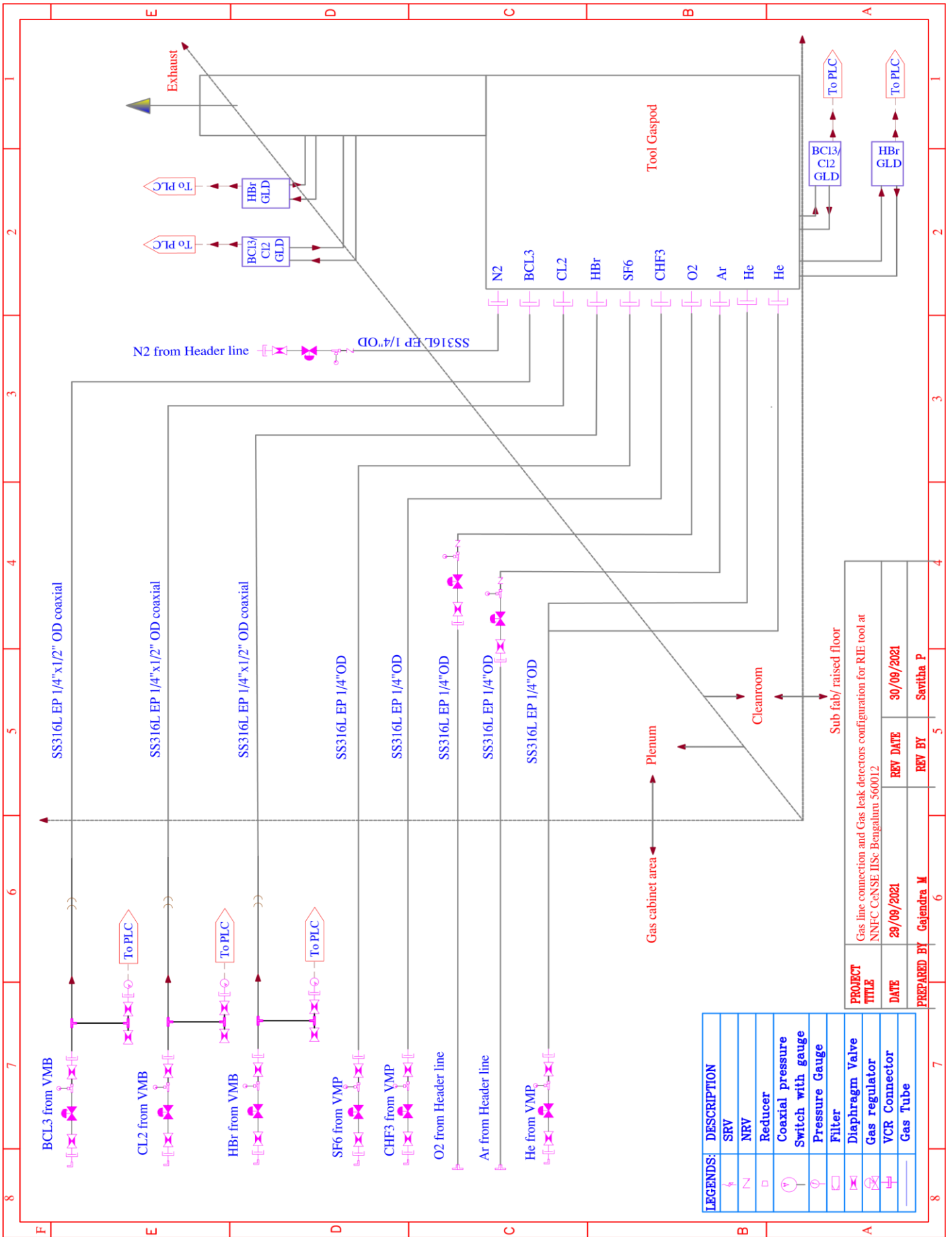
- Furnaces
- CVD equipment
- Sputter equipment
- Rf generators
- Electronic circuit boards (PCBs)
- Wet chemical hoods for concentrated acids and bases use and storage
- Solvent hoods for organic solvents use and storage
- Optical and E-beam lithography
- Characterization tools etc.

Procedure

1. Vendors will be required to submit their technical proposal and their commercial proposal in **two separate sealed envelopes**. Any violation of this will lead to the cancellation of the proposal.
2. **The deadline for submission of proposals is the 8th Nov, 2020, 5:30 pm Indian Standard Time.** Proposals should arrive at the Main office, GF-20, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, by the above deadline.
3. Vendors will be required to visit the site for actual measurements and routing of SS tubes. For site visit and verification, please contact NNFC office GF-20 CeNSE., IISc.
4. The decision of the purchase committee will be final.
5. The technical proposal should contain a compliance table. The first column must list the technical requirements in the order that they are given in the technical configuration below. The second column should describe your compliance in a “Yes” or “No” response. If “yes” the third column should provide the make and type of system. If “No” the fourth column should provide the extent of the deviation (please provide quantitative responses). The fifth column should state the reasons for the deviation. The sixth column can be used for highlighting the advantages of the system in the third column.
6. Please find the reference P&ID layout in Annexure-1 , Technical requirements in Annexure-2 and BOM in Annexure-3
7. Any additional capabilities or technical details, which you would like to bring to the attention of the purchase.
8. Only vendors who are compliant with the technical requirements will be considered for commercial comparison. The bid is awarded to the lowest cost vendors (referred as L1)
9. In the commercial bid, please provide an itemized cost of the system and *required* accessories, such as Regulators, Tubing, Valves, filters, NRVs, gauges etc.,

10. As an option, please provide itemized cost for any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the system. Vendors are encouraged to quote for as many add-ons as their part/material portfolio permits.
11. Please indicate the warranty provided with the part/material. A warrant of 1 year or more is preferred.
12. GST @5% for supply of items as per concession available to educational institutions and 18% on Transportation/services.
13. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor
14. The quotations should be on FOR-IISc Bangalore basis in INR only.
15. The technical proposal must include references of 3 previous installations (preferably semiconductor labs) in India. Please provide the names and contact addresses of the referees so that the committee can contact them independently.
16. Any questions can be directed to Dr. Savitha P, GF-20, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India. (savithap@iisc.ac.in)

Annexure- 1



Annexure- 2

Technical Requirements

Sl. No.	Item	Description
1.	Application	Specialty gases for a semiconductor foundry process. Project plans to connect the existing gas distribution network to the new tool. The work will involve cutting into exiting lines and extending them. Ability to maintain ultra-high purity of the gas lines during this job is crucial and the most important aspect of the order. We cannot tolerate any contamination due to operator error or inexperience.
2.	Industry type	Semiconductor research laboratory
3.	Tubing	Seamless SS-316L electropolished tubes with roughness ≤ 10 Ra.
4.	Valves & Fittings	<ol style="list-style-type: none"> 1. Internally electropolished with an internal surface roughness of ≤ 10 Ra 2. Only metal-to-metal face-seal to be considered from approved makes
5.	Welding work	The vendor must have at least 10 years of prior experience in SS316L orbital tube welding. Demonstrated ability to maintain purity needed for semiconductor works is crucial. Vendors must demonstrate capability by showcasing prior experience.
6.	Gas line Sticks in VMB and VMP	The Point of use sticks in VMB should contain the following : <ol style="list-style-type: none"> 1. $\frac{1}{4}$" VCR Connector, 2 Diaphragm valve, Gas Regulator, pressure gauge, Diaphragm valve and $\frac{1}{4}$" VCR Connector. 2. VCR End cap/Blind should be considered for all sticks. 3. Refer Annexure 1 for P&ID
7.	General gas line stick outside VMB at the tool entry point	The Point of use sticks in VMB should contain the following : <ol style="list-style-type: none"> 1. $\frac{1}{4}$" VCR Connector, Diaphragm valve, Gas Regulator, pressure gauge and NRV 2. Refer Annexure 1 for P&ID
8.	Vacuum line Gas stick above the VMB/ Coaxial Pressure switch	The Vacuum gas line stick above the VMB/ Coaxial Pressure switch should contain the following: <ol style="list-style-type: none"> 1. $\frac{1}{4}$" VCR blind/End cap, 2-Diaphragm valve, Co-axial pressure switch (to be connected to Plc). 2. Refer Annexure 1 for P&ID
9.	Gas leak detectors	The GLD should contain the following features and should be integrated to the current GMS SCADA at NNFC. <ol style="list-style-type: none"> 1. Onboard display with healthy, warning and critical lighting 2. 0 to 20 mA output for PLC 3. Relay output for different level of alarms 4. Cartridge of 2 years life.
10.	Hardware	<ol style="list-style-type: none"> 1. Clamps for tubing support 2. Unistrut support to be used at standard lengths 3. All line must be tagged/labelled for identification
11.	Testing & validation	<ol style="list-style-type: none"> 1. Pressure hold test at 1.5 times of operating pressure for 24 hours with 0 psi pressure drop. 2. Helium leak test. Must demonstrate a leak rate of less than 9×10^{-9} mbar.l/s 3. Oxygen (<2 ppm), Moisture (<2 ppm). Particle ($0.1 \mu < 5$ ppm) tests
12.	Installation & commissioning	<ol style="list-style-type: none"> 1. The Installation should be carried out by trained technicians.

		<ol style="list-style-type: none"> 2. The installation, testing and documentation procedure followed must be compliant to semiconductor standards.
13.	Safety	<ol style="list-style-type: none"> 1. The installation technician should follow all site safety terms. 2. Mandatary PPE: Safety helmet with face shield, electrically insulated gloves, electrical insulate Safety shoes.
14.	Experience	<ol style="list-style-type: none"> 1. The vendor must submit references from at least 3 previous installations of coaxial tubing (semiconductor industry only). 2. The vendor must have experience of handling BCl3 and Cl2 in the past, and Relevant Proof must be submitted to support the claim. 3. The names and contact addresses of the referees must be submitted with the proposal, so the purchase committee can contact them independently.

Annexure- 3

Bill of Materials

Sl.No.	Description	Unit	Qty.
1	seamless SS-316L-EP- co-axial tubes of ½" x ¼" with Roughness 10 Ra Make : Valex/Swagelok/ Dockweiler	Rmt	130
2	¼ inch, seamless SS316L-EP- tubes with Roughness 10 Ra Make : Valex/Swagelok/ Dockweiler	Rmt	150
3	1/4" long gland VCR	Nos.	20
4	1/4" VCR nut	Nos.	20
5	1/4" VCR Gasket	Nos.	40
6	1/4 X 1/2" Terminator	Nos.	6
7	1/4" shut-off Diaphragm Valve Max Pressure: 50 bar Manually operated Material: SS316, Seat : SS or Hastelloy End Connection: 1/4" VCR female end. Make : Swagelok/Parker/ Rotarex / Hamlet	Nos.	21
8	1/4" VCR End Cap, SS316 Make : Swagelok/Parker	Nos.	5
9	1/4" Non Return Valve, MOC: SS316, Working Pressure : 206 Bar, Cracking Pressure : 1/3 PSI, End Connection : 1/4" VCR male end. Make: Swagelok/Parker/ Rotarex / Hamlet	Nos.	5
10	1/4" Line Pressure Regulator MOC: SS316, Specially Cleaned, Inlet Pressure: 50Bar, Outlet Pressure: 0 to 10 Bar Diaphragm : SS or Hastelloy. Inlet & Outlet Ports = 1/4" VCR male end. Make : Swagelok/Parker/ Rotarex / Hamlet	Nos.	13
11	Centre mounted Pressure Gauge With Tee connector (female VCR end). Pressure range:(0 TO 10 Bar) Make: WIKA	Nos.	16
12	SS316L , BW Tee with Shoulder and VCR connector Make : Swagelok/Parker/ Rotarex / Hamlet	Nos.	13
13	SS316L 1/4" Equal Tee VCR Connectors. Make: Swagelok/Parker/ Rotarex / Hamlet	Nos.	1
14	SS316L ½" , ¼" , ½" tee	Nos.	3
15	Coaxial sleeve	Nos.	42

16	Coaxial elbows	Nos.	15
17	Coaxial pressure gauge with switch Pressure: 0 to 10 bar absolute Make: Wika	Nos.	3
18	Gas Leak detector(GLD) Make: Honeywell(midas)	Nos.	4
19	4 core 1 sqmm shelded cable	Rmt	1000
20	Unistrut with base plates.	Lot	1
21	Supply of labels, Tube Clamps and Supports for Pipeline	Lot	1

Note :-

1. Any type of Civil / Structural works such has making of wall openings/closing for the passage of pipes, supports, frame work etc.,will be in vendor/Contractor's scope.
2. Any Work permit/shutdown required for work must be intimated prior 5-6 days before start of work.

Thanking you,
Savitha P
Chief Operating Officer
National Nano Fabrication Center (NNFC)
Center for Nano Science and Engineering (CeNSE)
Indian Institute of Science (IISc)
Bengaluru 560012.