Domestic Tender

This is a Request for Quotation from domestic (India-based) vendors, for the Supply, Installation, testing and commissioning of MNCF semi-cleanroom HVAC at the Centre for Nano Science and Engineering (CeNSE) at IISc, Bangalore.

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Section 1 - Bid Schedule

1	Tender No	CeNSE/MNCF/2025/01
2	Tender Date	17/11/2025
3	Item Description	**Supply, Installation, testing and commissioning of MNCF semi-cleanroom HVAC**
4	Tender Type	Two-bid system Technical Bid (Part A) Commercial Bid (Part B)
5	Place of tender submission	GF 15, CeNSE Office, Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc), Malleshwaram, Bangalore - 560012 Karnataka, INDIA.
6	Last Date & Time for submission of tender	08/12/2025, 2:30 PM.
7	For further clarification (contact details)	Dr. Suresha S J Micro and Nano characterisation facility, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore-560012 Email: ____ sureshasj@iisc.ac.in___

Section 2 – Eligibility Criteria

Pre-qualification criteria:

1. The Bidder's firm should have existed for a minimum of 5 years. (Enclose Company Registration Certificate).
2. The Bidder should belong to either class 1 or class 2 supplier, distinguished by their "local content" as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter:

   a) Class 1 supplier: Goods and services should have local content of equal to or more than 50%.

   b) Class 2 supplier: Goods and services should have a local content of equal to or more than 20 % and less than 50%.
3. Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to a Class-1 supplier.
4. Quote should come only from the Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
5. The quotations should be on FOR-IISc Bangalore basis in INR only.
6. MSMEs can seek exemption from some qualification criteria. IISc follows GFR2017 for such details.
7. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per Annexure 4.
8. The Bidder must do a site survey before submitting the tender to understand the site's conditions, location of the work, to prepare drawings, to prepare P&IDs and GA drawings. An email request for a site visit can be sent to the ID in the contact details. The Bids without site visits will be considered disqualified.
9. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.
10. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as class-1 local suppliers/ class-2 local suppliers by claiming services such as transportation, insurance, installation, commissioning, training and other sales service support like AMC/CMC, etc., as local value addition.

11. The bidder must have **independently executed** at least **one turnkey project** for a **semiconductor facility** in the **last five (3) years**, covering the design, supply, installation, testing, and commissioning of the following utilities:
    - Chiller plant
    - Air Handling Units (AHUs)
    - Process cooling water (PCW) lines
    - Compressed dry air (CDA) lines
12. The bidder must have independently executed at least one Trunkey cleanroom project for Transmission Electron Microscope (TEM) facility in last five (3) years with temperature variation at 22±0.1 °C over the duration of 4 hours and RH 50±1% over the duration of 4 hours.
13. The bidder shall **submit documentary evidence**, including **reference Purchase Orders (POs)/completion certificates**, along with **contact details of the end clients** for the above works.
14. Participation in this tender shall be **restricted to a single legal entity**.
    - **Joint ventures, consortiums, subcontracting, or representation through multiple associated entities** (such as subsidiaries, sister concerns, or agents of the same parent organization) are **strictly prohibited**.
    - Any such multiple participation, whether direct or indirect, shall lead to **immediate disqualification** of all related bids.
15. Failure to submit valid and verifiable reference documents as specified above will result in **summary rejection of the bid** without further clarification.
16. Vendor should specify the detail lead times for supply, installation, testing and commissioning activity in the technical bid.

Section 3 – Terms and Conditions

A) Submission of Tender:

1. All documentation in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid systems).

a. Technical Bid (Part-A) – Technical bid consisting of all technical details and checklist for conformance to technical specifications.

i. The technical proposal should contain a technical compliance table with 5 columns.

ii. The first column must list the technical requirements, in the order that they are given in the technical requirements below.

iii. The second column should provide specifications of the instrument against the requirement. Please provide quantitative responses wherever possible.

iv. The third column should describe your compliance with a “Yes” or “No” only. Ensure that the entries in column 2 and column 3 are consistent.

v. The fourth column should state the reasons/explanations/context for deviations, if any.

vi. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify the response of previous columns, or provide additional details, compare your solution with that of your competitors or provide details as requested in the technical requirements table below.

vii. The Technical Bid will include a masked (blanked-out) copy of the Price Bid with makes as per the format, with all monetary values replaced by symbols such as "XXXXX" or "--".

viii. Commercial Bid (Part-B) – Indicating item-wise price for the items mentioned in the technical bid, as per the format of quotation provided in the **tender**, and other commercial terms and conditions.

3. The technical bid and commercial bid should each be placed in separate sealed covers, superscribing on both envelopes the tender no. and the due date. Both of these sealed covers are to be placed in a larger cover, which should also be sealed and duly superscribed with the Tender No., Tender Description & Due Date.
4. The SEALED COVER superscribing tender number / due date & should reach the Main office, GF-15, Centre for Nanoscience and Engineering, Indian Institute of Science, Bangalore – 560012, India, on or before due date mentioned in the tender notice. In case due date happens to be holiday the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.
5. All queries are to be addressed to the person identified in "Section 1 – Bid Schedule" of the tender notice.
6. GST/other taxes, levies etc., are to be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document (Indian Bidders only).
7. If price is not quoted in Commercial Bid as per the format provided in tender document the bid is liable to be rejected.
8. The Institute reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to the award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.
9. Incomplete bids will be summarily rejected.

B) Cancellation of Tender:

Notwithstanding anything specified in this tender document, the purchase committee, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:

a. To accept OR reject lowest tender or any other tender or all the tenders.

b. To accept any tender in full or in part.

c. To reject the tender, offer not confirming to the tender terms.

C) Validity of the Offer:

The offer shall be valid 60 Days from the date of opening of the commercial bid.

D) Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.
2. Bidders meeting the required eligibility criteria as stated in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.
3. Pre-qualification of the bidders shall not imply final acceptance of the Commercial Bid. The agency may be rejected at any point during technical evaluation or during commercial evaluation. The decision in regard to acceptance and / or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and decision in this regard shall be binding on the bidders.
4. The award of purchase-order will be subject to acceptance of the terms and conditions stated in this tender.
5. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:

a) Non-submission of complete offers.

b) Receipt of bids after due date and time and or by email / fax (unless specified otherwise).

c) Receipt of bids in open conditions.

6. In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall construe that the BIDDER had accepted the clauses as of the tender and no further claim will be entertained.
7. No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.

8. The lowest bid will be calculated based on the total price of all items tendered.

E) Purchase Order:

1. The order will be placed on the bidder whose bid is accepted by IISc based on the terms & conditions mentioned in the tender document.
2. The quantity of the items in tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.
3. If the quality of the product and service provided is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

F) Delivery:

- Supply, Installation, testing and commissioning of the works listed should be completed within 45 days from the date of PO.
- The shutdown of the facility will not be more than 15 days for the Installation and Upgrade. Vendors are allowed to work both day and night shifts.

G) Payment Terms:

As per GFR no advance payment can be made to domestic vendors, unless an equal amount of bank guarantee is provided.

H) Statutory Variation:

Any statutory increase in the taxes and duties subsequent to bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore subject to the claim being supported by documentary evidence. However, if any decrease takes place the advantage will have to be passed on to IISc, Bangalore.

I) Disputes and Jurisdiction:

Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Bangalore, India.

J) General:

1. All amendments, time extension, clarifications etc., within the period of submission of the tender will be communicated electronically. No extension in the bid due date/time shall be considered on account of delay in receipt of any document(s) by mail.
2. The bidder may furnish any additional information, which is necessary to establish capabilities to successfully complete the envisaged work. It is however, advised not to furnish superfluous information.

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3. All imported items should be quoted in the currency of the country of origin, and all locally sourced items should be quoted in Indian Rupees.
4. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from tendering/taking up of work in IISc, Bangalore.

Section 4: Safety & compliance requirements

1. All design and installation work shall comply with **ISO 14644**, **SEMI S2**, **NFPA 318**, and applicable **local EHS regulations**.
2. Vendor shall provide **gas safety systems** with certified gas cabinets, leak detection, ESD interlocks, and ventilation per semiconductor safety standards.
3. **Electrical and control panels** shall conform to **UL/IEC standards** with verified FAT/SAT and safety interlocks.
4. **Validation and commissioning** must include IQ/OQ/PQ, ISO particle classification tests, and documented acceptance reports.
5. Vendor shall submit all **EHS documents, and certifications,** before handover and final acceptance.

Section 5 – Technical Specifications

	Technical Specifications		
Sl.NO	**Description**	**Unit**	**Qty**
A	**HVAC**		
1	**Air Handling Unit**	Nos	2
	AIR HANDLING UNIT (AHU) (Quantity–2No.s) Scope of work included design, supply, installation and commissioning of dedicated AHU's for Micro and Nano Characterization facility with below specifications, TEMPERATURE: - 22±2℃ RELATIVE HUMIDITY: - 50±5% Noise levels in room: 55±2 dB		

i	1) AHU1 a. Total Supply air=8.796M3/sec b. Return air=7.677m3/sec c. Fresh air=1.119m3/sec d. Total fan Static=150mmWG e. 8 Row Cooling Coil Capacity=30Tr f. Heater capacity=76.10Kw g. Number of blowers: 2	Nos.	1
ii	1) AHU2 a. Total Supply air=5.349M3/sec b. Return air=4.394m3/sec c. Fresh air=0.955m3/sec d. Total fan Static=150mmWG e. 8 Row Cooling Coil Capacity=20Tr f. Heater capacity=46.28Kw g. Number of blowers: 2	Nos.	1
	AHU CASING 1) AHU shall be of modular construction and of draw through type comprising of pre filter section, fine filter section, cooling coil section and fan section. The framework shall be of extruded Al sections joined by molded high tensile reinforced plastic and shall be assembled to provide a sturdy, strong and self-supporting framework for various sections. Each section shall be complete with its own independent base and mounted on 14G galvanised sheet steel and aluminum die cast channels. Zinc deposition on the GI sheets shall be minimum 120gsm. 2) AHU shall be of double skin, with 45+5 mm thick PUF insulation sand-witched panel, 0.8 mm thick percolated GSS outer skin and 0.8 mm thick plain GSS sheet inside. The density of PUF insulation shall be minimum 38±1Kg/m3. 3) The framework for each section shall be joined together with soft rubber gasket in between to make joints airtight. 4) Suitable air tight access doors with Aluminum die cast heavy duty hinges and locks shall be provided for various sections. The casing shall incorporate thermal break profile and all other necessary design Features to ensure that condensation does not occur during all seasons. 5) The AHUs shall be having Sound attenuators at Suction and delivery of AHUs to reduce the sound to 50±2dB at point of Use		

	CIRCULATION FAN1) Fan Type: Direct driven, Plug type high efficiency centrifugal fan2) Desired noise level should be reduced to 70±5 dB or less by suitable sound attenuators on supply and return air path.3) Required Total static pressure: 200±2mmWG.4) Fan should have backward curved blades to improve efficiency.5) Fan blades should be made of Aluminium alloy for stability.6) Motor and fan assembly should be floor mounted and to be placed on extruded aluminium sections and on the vibration isolators to reduce amplitude to less than 25-50 microns.7) Motor Requirement: Adequately sized, TEFC Squirrel cage induction motor with VFD drive and suitable for415V ± 10%, 3 phase, 50 Hz± 5% AC power supply.8) The motor should be of high efficiency IE3 class as per IS12615–2011-NonFLP.9) Motor should be compatible for VFD operation.10) Flexible connection should be fabricated of neoprene coated flame proof fabric attached by screws or bolts at 6" interval should be provided. Flexible connection should be provided with the sufficient material width to prevent interference with the free operation of the fan vibration system.11) Fan should be factory statically and dynamically balanced as required to achieve field balance levels.12) Epoxy based coating shall be provided on all the surfaces of ferrous fan housing.13) Vibration measurement should be made in three orthogonal areas at each bearing location. Where equipment configuration precludes measurement at bearing; measurement should bemade on adjacent routine structure.14) Peak to peak displacement at the rotational frequency should be measured. Governing displacement should be at the rotational frequency of fan. Controlling displacements at frequencies other that the rotational frequencies are not in compliance with the balancerequirements.		
	COOLING COILS 1) Cooling medium requirement :Chilled water at a temperature of 8±1 Deg C 2) The velocity across the cooling coils should not exceed 2.25 m/s. accordingly, cooling coil area should be selected. 3) Coils should be of seamless copper tubes with Al fins, 8 rows deep, with 12-13 fins/inch, with copper header, flange connection and SS 304 enclosure. 4) Copper tubes should be 25±5% SWG and hydrostatically tested for 21kgpersq.cm. 5) Cooling coil condensate tray should be of 14±5% SWG SS304 material. 6) Vertically stacked Cooling coils should have SS 304 drip trays between the SS pipe drain connection left at the drain tray and finally should be connected to drain point with suitable trap to check ingress of outside air. 7) Fouling factor requirement:0.0002hr.m2DegC/Kcal. 8) Accessories requirement: Frame, support, inlet and outlet header, vent connection and drain connection with valves, pressure gauges with valves at inlet and outlet and their associated fittings.		
	HEATERS The AHUs should have Electrical heaters section to maintain the cleanroom temperature in the winter season. 1) Strip/Tubular heaters of sufficient capacity should be selected in each AHU to maintain the area temperature. 2) The heaters should be complete with mounting frame, Thermostat, humidistat, air stat in redundant arrangement along with all control devices which will be controlled by thyristors.		

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	FILTERSThere should be 3 stages of filtration in the AHU .Specifications:• Filters face velocity should not exceed2.25m/sec.• Filter mounting frame should be made out of extruded aluminum material. The frame should be strong enough to withstand the weight of two persons for climbing the frame during the filters replacement.• Between filter sections, minimum spacing of 600 mm should be maintained.• Filters should have a quick release mechanism and sealing gasket.• All the filters should have Al frame(flange type)with a module size of 600mm x 600mm (preferably):1) 1st Stage Pre-filters should be of G4 grade as per EN 779, non-woven synthetic material sandwiched between HDPE mesh on both sides with minimum thickness of 150 mm flange type with an initial pressure drop of 5 mm WG or less, suitable for cleaning with dry air or water jet.2) 2nd stage bag filters should be of F7 grade as per EN779, non-woven synthetic material sandwiched between HDPE mesh on both sides and suitable for minimum thickness of 300mm initial pressure drop of 6-8 mm WG or less, suitable for cleaning with dry air or water jet.3) 3rd HEPA Filters should be of H14 grade, suitable for AHU capacity. Filter media should be of micro fiber glass, Efficiency required: 99.995%down to 0.3 micron. The filters should have Anodized Al frame with a module size of 600mm x 600mm (preferably). The filter media should be epoxy/PU bonded to the filter casing,Pressure drop<15mmofWG.Accessories Requirement: Frame ,supports, sealing gasket (Neoprene gasket		
	Humidifier: Pan Type Humidifier Construction : Tank made from 1.2mm or 2mm thick Stainless Steel 304 grade sheet, In welded construction with steam Inlet / Outlet / Drain / Overflow Nozzle, Top Cover Open able with S.S Bolts Heating Element : Electrical Resistance Immersion Type, S.S tube Nickel plated Rating : 4KW x 3 Nos = 12KWWith 0.5 KW Additional Heater with Thermostat To maintain 75°C Temperature inside tank ElectricalPanel:Madefrom18GaugeCRCSheet(Epoxy Painted), Main Incomer of suitable capacity (L&T make) Outgoing Contactor (L&T / ABB / Schneider make), Fault Indicating & R.Y.B phase Indicating lights (Esbee make),On / Off switch with light (Esbee make) Duly Factory wired. Controls: Level Switch – RC-61L for Low Level Cut out (with Nylon Ball)Float valve with S.S Ball at Inlet connection. Thermostat for additional heater (Range = 5 Deg C to 75 Deg C) Master Thermostat for total load (Range = 50 Deg C to 120 Deg C) Sight Glass provided to check water, Overflow valve. Insulation: 25mm thick fiber glass wool and cladded with 22Gauge G.I sheet.		
i	Humidifier5.5Kg/Hr	Nos.	1
ii	Humidifier2.1Kg/Hr	Nos.	1
2	**Chiller Unit**		

	Supplying, installing, testing and commissioning of AHRI Certified Air Cooled SCROLL WATER CHILLING UNITS of 40 TR capacity(actual) complete with twin screw design compressor with star- delta, squirrel cage induction motor, starter panel machine mounted, water cooled condenser, insulated chiller, flow switch at chiller and condenser, neoprene pads, integral refrigerant piping and wiring, BMS interface unit Mod bus, counter flanges along with flanged connection for condenser and cooler water in/out connections, complete charge of refrigerant and oil, accessories as required and called for, automatic and safety controls mounted in central micro- processor based console panel and all mounted on a steel frame complete as per specifications. Motor shall be suitable for 415±10% 50 cycles. 3phase AC supply and motor cable terminal box shall be suitable to connect copper Cabling. Refrigerant used shall be Ozone friendly HFC 134a/R410a as detailed in specifications. First chiller shall be factory tested at design conditions at 100%, 75%, 50% and 25% load.	Nos.	2
3	**Chilled water circulation Pumps**		
	Chiller Water Pumps1) Quantity–2Nos.(1W+1S)2) Pump flow rate:600LPM@3Kg/cm23) Pump type: Horizontal centrifugal pumps.4) Heavy duty for continuous operation5) MOC: SS3046) Impellor: SS3047) Motor: Adequately sized TEFC, squirrel cage induction motor having high efficiency ratingIE3 Class and suitable for 415V + 10%, 3 Phase, 50 Hz + 5%.8) Pump shall be horizontal, closed coupled, single stage, centrifugal, end suction with back pull-out design. Hence, the rotating unit can be removed and serviced without disconnecting the suction and discharge pipe.9) The noise level shall not exceed 75dbA at 1m from the source.10) Accessories: Pressure gauges at suction and discharge, isolating butterfly valves at suction and discharge, check valve, strainer, integral piping, base frame, foundation bolts, nuts, vibration isolator/rubber pads etc. Pumps should be Horizontal end suction Type.	Nos.	2
4	**Chilled water pipeline** **Piping** 1) All the pipes shall be SS304 SCH10, PN10rated, all pipelines should be joined with TIG welded. 2) Square cut plain ends should be welded for pipes up to and including100MMDia. 3) All pipes 100MM Dia. Or larger should be beveled by 35DEG.before welding. Pipe **Supports/hangers** 1) Pipe supports should be provided and installed for all piping wherever indicated, required or otherwise specified. Wherever necessary, additional hangers and supports shall be provided to prevent vibration or excessive deflection of piping and tubing. 2) All vertical pipe support should be made of 12mm M.S. rods and the horizontal support should be of M.S. angles of 50x50x4 mm thick. 3) Pipe supports should be adjustable for height and prime coated with rust preventive paint & finish coated with black paint using approved grade of paint. **Joining** 1) All pipe lines should be joined with TIG welded. 2) All pipes 125 MM Dia. or larger should be beveled by 35 DEG. before welding. 1) The body of the check valves should be made from SS304 PN16 rated, single piece casting in cylindrical shape 2) There should be two plates, which should be hinged in the centre of the circle. 3) Both plates should have springs attached to them for assisting in closing action of the valve. 4) There should be properly/designed metal to metal seal between the plates and the outer body, to ensure non leaking sealing. 5) The valve design should confirm to API 594 or equivalent specifications. **Strainers** 1) Strainers should either be pot type or 'Y' type SS304 body PN 16 rated, tested up to pressure applicable for the valves as per design.	Lot	1

	2) The strainers should have a perforated bronze sheet screen with 3 mm perforation and with a permanent magnet, to catch iron fillings. **Al Cladding Insulation** All the chilled water lines shall be Chilled water line shall be insulated with Puff 50mm thick insulation and cladded with Aluminum sheet.		
	TESTING 1) In general, tests should be applied to piping before connection of equipment and appliances. In no case should the piping, equipment or appliances be subjected to pressures exceeding their test ratings 2) The tests should be completed and approved before any insulation is applied. Testing of segments of pipe work should be permitted, provided all open ends are first closed, by blank offs or flanges. 3) After tests have been completed the system should be drained and flushed 3 to 4 times and cleaned of all dust and foreign matter. All strainers, valves and fittings should be cleaned of all dirt, fillings and debris. 4) All piping should be tested to hydraulic test pressure of at least one and half times the maximum operating pressure but not less than10kg/cm2 for a period of not less than12hours.All leaks and defects in the joints revealed during the testing should be rectified to the satisfaction.		
5	**Instrumentation & Control**		
	1. Three-way flow control valve, complete with all the accessories and with a manual bypass line with an isolation valve.	Nos.	2
	2.All three areas/partitions shall have temperature sensors with accuracy of ±0.2 deg C or better and humidity RH sensors with accuracy of ±1% or better.	Nos.	3
	3. The cooling coil water-inlet and water-outlet shall have temperature sensors cum transmitters.	Nos.	2
	4. Pressure gauges with isolation ball valves at inlet and outlet of the coils. In order to ensure a protection, a Temperature gauge shall come with a thermo well.	Nos.	4
	5.Pressure gauges with isolation ball valves at inlet and outlet of all the pumps	Nos.	4
	6. Differential pressure sensor across pre filters and fine filters.	Nos.	6
	7.VFDs for AHU fans.HMI control panel for monitoring Temperature, T and humidity, RH of all Partitions/rooms.AHU supply air volume shall be varied based on the room exhaust flow rates. The temperature control with SCR, and auto manul operation of VFD.	Nos.	1
6	**AIR DISTRIBUTION SYSTEM:DUCTS, GRILLS & DIFFUSERS DUCTS AND INSULATION**		
	HVAC Ducting Distribution		

	Duct Specifications: Complete supply air ducting including the flexible ducting connecting the solid duct work with filters collar and return air ducting is covered under scope of work. • DustsshallbemadefromGIsheetoflockformingqualityhavingZincCoatingasperASTMA-525G90. • The ducts shall be constructed as per SMACNA standard. • Theductsshallbedesignedfor100mmofWCpressure. • The ducts will be used for clean room class 100 environments. To meet this requirement, the GI sheet for manufacturing the ducts shall be totally oil free. • Velocity for Supply Air shall not exceed 1500 fpm and return air shall not exceed 1000 fpm, ducting shall be complete with dampers, vanes, anchor fasteners, supports, access doors, neoprene rubber gaskets etc. • All the ducts shall be supported with the building structure with GI threaded rods of 10mm dia and spring isolators of GI or coated suitable for clean rooms. • Ducting shall include dampers, supports, Isolators etc. • All duct supports, re-enforcement shall be galvanized. • All the dampers shall be Al anodized. • The duct sections shall be joined with Angle iron flange joints. • All the edges with min or leaks should be sealed with silicon sealant. • Duct inspection window to be provided in the main ducts and plenum boxes. The inspection windows shall be leak proof, easy to open/close. • The ducts fabrication work shall be carried out in dust free environment. Sheet Specifications: All duct work, sheet metal thickness and fabrication unless otherwise directed, shall strictly meet requirements, as described in IS: 655-1963 with amendment-I (1971 edition).		
	22G Ducting	Sqm	1300
	Flexible Duct Work • Insulated, flexible duct work shall be installed from Al supply duct work to each HEPA filter ceiling module. • The flexible duct work shall be sealed and secured at each filter module and sheet metal collar utilizing stainless steel flexible duct bands and duct band locks. • The diameter of flexible duct shall be12”(approx.) matching with the air inlet collar size. • Flexible ducting shall be heavy duty suitable for +2500 Pa of air pressure and 30m/s air velocity. • Material of duct: Multiple layers of Al-polyester laminated with spring steel wire helix.		
	Flexible duct dia 250mm	Rmt	120
	Volume Control Damper		
	• At the junction of each branch duct with main duct and split of main duct, volume dampers must be provided. Dampers shall be two gauges heavier than the gauge of the large duct and shall be rigid in construction.• The volume dampers shall be of an approved type, lever operated and completed with locking devices which will permit the dampers to be adjusted and locked in any position and clearly indicating the damper position.• The dampers shall be of splitter, butterfly or louver type. The damper blade shall not be less than1.25 MM (18) Gauge, reinforced with 25MM angles 3MM thick along any unsupported side longerthan 250MM. Angles shall not interfere with the operation of dampers, nor cause any turbulence.	Nos.	55

	Fire Dampers • Automatic fire dampers to be provided wherever required as per the safety standards. The damper shall be multi blade louver type. The blades should remain in the air stream in open position and shall be constructed with minimum 1.8 mm thick galvanized sheets. The frame shall be of 1.6 mm thickness. Other materials shall include locking device, motorized actuator, control panel to trip AHU motor etc. • The fire dampers shall be capable of operating automatically on receiving signal from a fire alarm panel. All control wiring shall be provided between fire damper and electric panel. • A hinged and gasket access panel measuring at least 450mmx450 mm shall be provided on duct work Before each reheat coil and at each control device that may be located inside the ductwork.	Nos.	4
7	**Thermal Insulation`**		
	Duct Insulation Supply & Return Air Duct Thermal Insulation with Aluminum foil faced self-adhesive, Closed cell, Nitrile Rubber Insulation with proper sealing of joints filled with silicon sealant. Insulation of duct exposed to atmospheric/ambient conditions using Aluminum faced Closed cell Nitrile rubber, Class 'O 'fire rating, density not less than 50 Kg/m3 all the joints shall be sealed with 75mm thick Al tape. Supply Air Duct: 19mm thick Return Air Duct:19 mm thick Al-Cladding: HVAC ducts exposed UV light shall be cladded with Aluminum Sheets of suitable gauge.		
I	19mm thick for Supply air ducting	Sqm	700
II	19mm thick for Return air ducting	Sqm	700
8	**Supply and Return Air Grills with Plenum Boxes**		
	Standard Grills • The supply and return air grills shall be fabricated from extruded aluminum sections. The supply air grills shall have single/double louvers. The front horizontal louvers shall be of extruded section, fixed/adjustable type. There is a vertical louver where required shall of aluminum extruded sections and adjustable type. The return air grill shall have single horizontal extruded section fixed louvers. The grills may or may not be with an outer frame. • The damper blades shall also be of extruded aluminum sections. The grill flange shall be fabricated out of the aluminum extruded section. Grills longer than 450 mm shall have intermediate support for the horizontal louvers.		
I	**Supply Air grill** The linear diffusers/grilles shall be fabricated from Aluminum extruded sections. The diffusion blades shall be extruded, flush mounted type with single or double direction air flow. The frame shall be of aluminum extruded section and shall hold the louvers tightly in fixed position. The dampers as described under grilles shall be provided wherever specified. Includes GI Plenum Box	Nos.	55
Ii	**Return Air Grill** The linear diffusers/grilles shall be fabricated from Aluminum extruded sections. The diffusion blades shall be extruded, flush mounted type with single or double direction air flow. The frame shall be of aluminum extruded section and shall hold the louvers tightly in fixed position. The dampers as described under grilles shall be provided wherever specified.	Nos.	55
9	**Electrical**		
	HVAC Electrical Panels outdoor panel	No	1

I	1) HVAC Electrical Panel : General Design Consideration a) System configuration i. Voltage Supply: 415V± 10%ii.Frequency:50Hz±5%iii.NoofPhaseandgrounding:3Phase&Solidlygroundearthiv.PowerDistribution: A.C., 3 Phase 4 wire for 3 Phase system, 1 Phase 3 wire system b) Code & Standards All electrical equipment and accessories to be furnished, installed and commissioned shall be designed, manufactured, tested and installed in accordance with relevant Indian Standard Specifications (ISS), Indian electricity rules and any other applicable regulations.2) Cabling for electrical supply from wall mounted electrical panel to respective AHUs/Chillers/Pumps/Humidifier shall be armored copper cables.3) Copper lugs should be used for cable termination.4) Bus bar for incoming should be of Copper.5)Cabling for all the equipment shall be laid through GI ladder or conduit. 6) AHU blower should operate on VFDs7) Heaters control should be through Thyristors 8)Star-delta starter for chilled water pumps9) Electrical Panel with bypass arrangement DOL/SD type electrical control panel and provision Microprocessor controller with display for Temperature, RH controlling, monitoring with status (AHU) interlocking with 3 way modulating valve & Strip heater system and SCR for Heater controllers. Provision for : a) AHU (Heaters, Blower, Humidifier) b) Pumps c) Chillers d) Compressore) Process Cooling Water system10) AHU panel Interlocks a.FlowSwitch-1nos b.AHUDoorinterlock-1nosc. Smoke and Fireinterlock- 1nosd.ThermalInterlock-1nose.AccesscontrolEmergencyinterlock-1nos.		
Ii	**HVAC Electrical DB:** Supply, Installation, Testing and commissioning of Floor mounted type 14swg CRCA Powder coated **out door electrical control panel** with main incomer MCCB and provision for Microprocessor controller with HMI(refer the I/O points mentioned in the Technical Specifications ,PLC panel with HMI). HVAC electrical DB will have the following provisions		
	1)AHUBlower-VFD-3Ph-4 nos.		
	2)Chillerunit-41Kw,3Ph-Contactor-2nos.		
	3)Heater-SSR-90,50Kw3Ph-2nos.		
	4)Pumps-7.5Kw,3Ph-ContactorwithStarDeltaStarter-2nos.-		
iii	**PLC Panel With HMI** Dedicated HVAC BMS system with HMI panel shall be with the following I/O's.		
	Interlocks		
	1)AirFlowSwitch-2nos		
	Room Air temp. and RH		
	Chiller interlocks(Provision only)		
	2)AHU Door interlock-2nos		
	3)Chiller-PumpInterlock-2nos		
	4)Smoke and Fire-2nos		
	5)Thermal Interlock-2nos		
	6)Access control Emergency interlock-2nos.		
10	**Electrical Cabling and Accessories (Cables, wire, conduit, Earthing, Switch boards, Switches/Sockets etc)**		

	Cables The scope includes the Supply and installation of ISI marked PVC/XLPE insulated, Extruded PVC inner sheath, GI strip armored overall FRLS PVC outer sheathed, on wall/surface/existing cable tray as required as per thedetailedspecificationandquantityintheBOQ.ControlcablesshallbecopperconductorPVCinsulatedandpower cables shall be XLPE insulated. The necessary hardware for installation of cable like cable tie, clamps, tags etc. Will be in the scope of contractor. Make of power/control cable shall be Polycab/ Havells/ KEI/NICCO/CCI/National/gloster/Ecko. Instrumentation cables shall be conforming to BS 5308, type II, 300/500 Grade with stranded 0.75sq mm copper conductor, PVC insulated, color coded, twisted to form a pair/pairs, twisted to form a unit ,units laid up ,mylertaped binding, overall screened with aluminium mylertap with tinned copper drain wire, extruded inner sheathed, galvanised steel roundwire/strip armoured,overall FRLS PVC sheathed.		
	WireThe scope includes the Supply and installation of stranded Copper conductor wire, 1100-volt grade, FR PVC insulated single core conforming to IS 694 as per the detailed specification, quantity in the BOQ.Conduit: The scope includes the Supply and installation of ISI make rigid steel, hot dip galvanized conduits of different size, quantity & Specification as per BOQ. The conduit shall be installed on wall/surface/ metal truss/existing cable tray, as required. Flexible conduit shall be made with bright cold rolled annealed and electro-galvanized mild steel. Installation of conduits shall include all necessary hardware, metal strip, welding,Clamps etc.		
i	Cabling for AHU Blower Interlock and Emergency Light-2nos.-2.5mm2,3CoreCable	Rmt	60
ii	Cabling for modulating valve-2nos.-1.5mm2 shielded 3Core Cable	Rmt	60
iii	Cabling for Pumps-7.5KW-2nos.-4mm2,4core Cable-2nos	Rmt	100
iv	Cabling for Duct Temp Sensor-2nos1.5mm2 shielded 3 Core Cable-2sets	Rmt	60
v	Cabling for Diffrential pressure sensor 1.5mm2 shielded 3 Core Cable-9sets	Rmt	270
vi	Cablingfor-Flowsensor-3Nos.1.5mm2shielded3CoreCable-2nos	Rmt	60
vii	Cabling for-Room Temp and Rh-3Nos.1.5mm2 shielded 3 Core Cable-3sets	Rmt	150
viii	Cablingfor-Water Thermal Sensor-2Nos.-1.5mm2 shielded 3 Core Cable	Rmt	100
ix	Cabling for Chillers 16mm2 cable 4 Core cable-2sets	Rmt	120
x	Cabling for AHU Blower 18Kw-2nos-4 core 6mm 2cable-2sets	Rmt	60
xi	Cabling for Heaters-3Ph,75Kw-25mm2,3Core cable-3sets	Rmt	30
xii	Cabling for Heaters-3Ph,50Kw-16mm2,3Core cable-3sets	Rmt	30
xiii	Cabling for HMI Panles1.5mm2 shielded 3 Core Cable	Rmt	70
xiv	GI Perforated Trunking with supporting System	Rmt	90
G	**Misc**		
i	Scaffolding Charges for duct erection	Nos	1
ii	Duct Supporting system	Kgs	300
iii	Wall Openings for Duct entry	Lot	1
iv	Engineering, Design and drawings	Lot	1
v	Documentation	Lot	1
vi	Commissioning and validation	Lot	1
vii	Packing forwarding and Transportation	Lot	1
viii	Housekeeping	Lot	1

H	**Delivery- Supply, Installation, testing and commissioning of the works listed should be completed within 45 days from the date of PO.**		
	Optional items, but mandatary to submit the technical and commercial bid		
Sl.No.	Description	Units	Qty
A	SITC of Process colling water lines		
i	2" SS 304 SH,10 seamless pipes	Rmt	180
ii	1" Tap off points for POU with SS304 PRV (0-10 Bar), Filter(0.5 micron), ball valve and flow meter (o-20 LPM)	Nos	20
B	SITC of Compressed dry air lines		
i	1" aluminium pipelines rated 20bar capacity with necessary fitting	Rmt	154
ii	1" Tap off points for POU with PRV (0-10 bar) and moisture filter	Nos	20

Section 6- Technical Bid

The technical bid should furnish all requirements of the tender, along with all annexures, as listed below in this section, and submitted to:

The Chair,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.
Attention: GAJENDRA M, NNFC, 080-22933319

Technical bid should have the following:

1. Technical compliance sheet for technical specification as per section 5.
2. Supporting document as per section 2.
3. Supporting document as per section 3.
4. Supporting document as per section 4.

Annexure-1:

Details of the Bidder

The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name
Designation, Seal Date:

Annexure-2:

Declaration regarding experience

To,
The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.

Ref: Tender No:
Dated:

Supply, Installation, testing and commissioning of MNCF semi cleanroom HVAC

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has ___ years of experience in supplying _____ _____

(Signature of the Bidder)
Printed Name Designation, Seal Date:

Annexure–3:

Declaration regarding track record

To,
The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.

Ref: Tender No:
Dated:

Supply, Installation, testing and commissioning of MNCF semi cleanroom HVAC

Sir,
I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company/ firm is not currently debarred / blacklisted by any Government / Semi Government organizations / institutions in India or abroad. I further certify that I am competent officer in my company / firm to make this declaration.

OR
I declare the following:

Sl.No	Country in which the company is Debarred /blacklisted / case isPending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long

(NOTE: In case the company / firm was blacklisted previously, please provide the details regarding the period for which the company / firm was blacklisted and the reason/s for the same).

Yours faithfully
(Signature of the Bidder)

Name
Designation, Seal: Date:

Annexure –4:

Declaration for acceptance of terms and conditions

To,
The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.

Ref: Tender No:
Dated:

Supply, Installation, testing and commissioning of MNCF semi cleanroom HVAC

Sir,
I have carefully gone through the Terms & Conditions as mentioned in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)
Name
Designation, Seal: Date:

Annexure –5:

Details of items quoted:

a. Company Name
b. Product Name
c. Part / Catalogue number
d. Product description / main features
e. Detailed technical specifications.
f. Remarks

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

CENTRE FOR NANO SCIENCE AND ENGINEERING
Indian Institute of Science, Bengaluru 560 012, India
T +91 80 2293 3276, 2293 3291
F +91 80 2360 4656
www.cense.iisc.ac.in

Annexure –6:

***(To be submitted in the company letter head by supplier)**

Declaration of Local Content by Local supplier

Subject: Public Procurement (Preference to Make In India)

References:

Preference to Make in India including counter offering will be as per the Public Procurement (Preference to Make in India), Order 2017 available in the following links https://dipp.gov.in/publicprocurements

http://dipp.nic.in/sites/default/files/publicProcurement_MakeinIndia_15June2017.pdf
http://dipp.nic.in/sites/default/files/Revised-PPP-MII-Order-2017_28052018.pdf
https://dipp.gov.in/sites/default/files/PPP-MII%20Order%20dt%2029th%20May%2019_0.pdf
https://dipp.gov.in/sites/default/files/PPP%20MII%20Order%20dated%204th%20June%2020.pdf

We hereby declare with reference to above subject and references that M/s …… (Tick whichever is applicable as below)

"Class-I local supplier" meeting the requirement of minimum local content equal to 50% (fifty percent) or more defined in the above government notification for the goods and services

(or)

"Class-II local Supplier" meeting the requirement of local content 20% to less than 50% (fifty percent) defined in the above government notification for the goods and services

(or)

Non Local supplier(If not belonging to Class-I&Class II)

Please mention the details against the following:

Enquiry no:
Type of Supplier (Class-I/Class-II):
Product:
Project:

Details of location at which local value addition will be made is as follows:

CENTRE FOR NANO SCIENCE AND ENGINEERING
Indian Institute of Science, Bengaluru 560 012, India
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F +91 80 2360 4656
www.cense.iisc.ac.in

_____

We also understand that the false declarations will be in breach of the code of Integrity under rule 175(1)(i) (h) of the General financial rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.

Authorized Signature M/s----------

(Signature and seal)

Place:

Date:

CENTRE FOR NANO SCIENCE AND ENGINEERING
Indian Institute of Science, Bengaluru 560 012, India
T +91 80 2293 3276, 2293 3291
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Section 7- Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned under:

S.No	Description	Quantity	Make	Unit Price	Sub total
1.	Items listed in technical bid	As per Technical bid			
2	Installation charges				
3	Tax				
4	Delivery time (including Supply installation, testing and commissioning)				
	Total				

Any additional items

S.No	Description	Quantity	Make	Unit Price	Sub total

Addressed to

The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.
Attention: GAJENDRA M, NNFC, 080-22933319

Section 8 – Checklist

(This should be enclosed with technical bid- Part A)
The following items must be checked before the Bid is submitted:

1. Sealed Envelope "A": Technical Bid

1. Section 5- Technical Bid (each page signed by the authorized signatory and sealed) with the below annexures and other documents.

a. Annexure 1: Bidders details
b. Annexure 2: Declaration regarding experience

c. Annexure 3: Declaration regarding clean track record
d. Annexure 4: Declaration for acceptance of terms andconditions
e. Annexure 5: Details of items quoted
f. Annexure 6: Declaration Of Local Content by Local supplier

2. Copy of this tender document duly signed by the authorized signatory on every page and sealed.

2. Sealed Envelope "B": Commercial Bid

1. **Section 7: Commercial Bid**

Your quotation must be submitted in two envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and duedate and both of these in sealed covers and put in a bigger cover which should also be sealedand duly super scribed with Tender No., Tender description & Due Date.