



**Indian Institute of Science (IISc)  
Bangalore - 560012**

Supercomputer Education and Research Centre (SERC)  
IISc

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Notice Inviting Tender (NIT) in ***E-TENDER mode only*** through  
**Central Public Procurement Portal (CPPP)** of Government of India under  
Two-Cover Bid System

for

**Supply and Installation of Infrastructure for  
HPC (High Performance Compute) Room in  
Supercomputer Education and Research Centre (SERC)  
Indian Institute of Science, Bangalore**

**Tender No.: [IISc/Purchase/SERC/2021/1](#)**

**Date: [February 5, 2021](#)**

Chair

Supercomputer Education and Research Centre (SERC)

Indian Institute of Science (IISc)

Bangalore – 560012, India

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CPPP Website for e-Tender Submission

<https://eprocure.gov.in/eprocure/ap>

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## 1. Preamble

Indian Institute of Science (IISc), Bangalore is India's leading institution of advanced education and research in the sciences and in engineering. IISc has a vibrant and diverse campus and carries out research across 42 departments in most areas of the basic and applied sciences. The Supercomputer Education and Research Centre (SERC) is a country's leading computing centre in Indian Institute of Science (IISc) having the state-of-the-art computing facilities, catering to the ever-increasing demands of high performance computing for scientific and engineering research. The supercomputing facility at SERC is a symbiosis of computing, network, graphics, and visualization. The Centre houses state-of-the-art computing systems with sophisticated software packages. The center maintains and upgrades infrastructure for its supercomputing systems including creation of data center facilities with adequate cooling.

## 2. Schedule of Requirements

This tender is for a turnkey solution for creating a HPC room with adequate cooling facilities with fire safety and other BMS-related systems for hosting small and medium scale HPC (High Performance Computing) systems.

Following is the list of requirements.

1. Precision Air Conditioners with hot aisle containment and necessary ducting: DX based, 1 working and 1 standby. The working unit should provide a minimum of 21 TR cooling capacity.
2. Raised flooring panels and fire-resistant glass sliding door.
3. Server racks: Total of seven server racks.
4. Electrical components including emergency heavy-duty exhaust fan.
5. BMS-related components including smoke detection, fire alarm, fire suppression, video surveillance, rodent repellent system and water leak detection systems.
6. Buybacks of existing PACs.
7. Five-year comprehensive warranty services.

Technical details of the above components are mentioned in the subsequent pages.

The bidders must clearly understand the existing support infrastructure available and propose accordingly. The solution proposed by the bidders is expected to be a total turnkey solution operated by a single bidder meeting all the stipulated requirements. Design, Supply, installation and commissioning along with on-site comprehensive warranty services for a period of five years. The solution quoted by the bidder for meeting the above stated requirement may require best in class point products/systems from multiple OEMs in order to ensure that all the stipulated requirements are met, and the solution is optimal and cost-effective.

The bidders fulfilling the criteria as per this tender document are invited to submit their bid in **e-tender mode only** through Central Public Procurement Portal (CPPP) of Govt of India, for which website address is as follows:

<https://eprocure.gov.in/eprocure/app>

The bidders will be required to register themselves with the CPPP, in order to participate in the bidding, for which above website may please be consulted.

Potential bidders are encouraged to contact the SERC office, set up appointments and make site visits before submitting the bid.

### 3. Technical Details

The bidder may visit the site to inspect the facilities in SERC before quoting for the tender for the below requirements.

SERC has identified two adjoining rooms, both of size 20 feet x 18 feet, for the data center facility specified in this tender document: **a compute server room and a PAC room**. The compute server racks will be installed in the compute server room and the PACs that will be procured as part of the tender will be installed in the PAC room. Raised (false) flooring will have to be provided only in the compute server room. Refer the layout given in Section 4.

The details of the components of the turnkey solutions are give in the following sections.

List of Recommended Makes / Models of the major components/ equipment is given in **Annexure A**. However, bidder may offer equipments of any suitable make and model that complies with the tender specifications and conditions.

#### 3.1 Precision Air Conditioners with Hot Aisle Containment

1. 2 Nos Direct Expansion (DX) Air-cooled Precision AC (PAC) units of exact same configuration and capacity with N+1 Redundancy. The capacity of the working unit must be minimum 21 TR. The units should operate in DX mode.
  - a. Parameters for the cooling units:
    - Supply air temperature: 20 deg C
    - Return air temperature: 28 deg C
    - Humidity: 40-65 RH
    - Ambient temperature: 38 deg CNote: If both supply and return air temperatures cannot be ensured, the preference is for return air temperature.
  - b. Backward vane composite low noise EC fans preferably DC voltage driven.
  - c. The condensing unit should be equipped with variable speed low noise fan.
  - d. NVH level of each PAC unit should be less than 68 DB (air noise) at 1 m from the PAC at rated speed corresponding to 50 Hz operation.
  - e. The A-Frame / slanted coil HEX in each PAC unit should have a drip tray for condensate collection with the drain pipe with adequate hydraulic gradient to allow the condensate to drain outside the DC room. The solution should fit within the specified space earmarked for the PAC unit.
  - f. Each PAC unit should deliver a nominal airflow of 14,000 CFM of air at operating speed with modulation from 12,500 to 15000 CFM. The air flow rates are calculated based on the pressure drop the vendor would provide with proposed cooling solution.

- g. The PLC in the PAC should be fully equipped to log all data pertaining to the operation of the PAC unit such as alarms, fan speed, air inlet and outlet temperatures, humidity etc. It should allow remote monitoring and login facility in addition to sending alarms anomalies via email/SMS etc. Vendor has to install digital energy meter with remote logging capability at the power input at each PAC.
  - h. The PLC in the PAC should have a provision to switch between the units to provide N+1 redundancy in a pre-programmed manner by the user or on cooling need basis when there is need for extra cooling or in the case of high return air temperatures. OEM design is also acceptable.
  - i. PAC units and associated components must be given certification of performance to meet the tender specifications at the site after installation and acceptance tests, and before commissioning and the beginning of the comprehensive warranty.
  - j. All refrigerant lines up to the condensing unit should be insulated. All insulation exposed to ambient should be UV compliant insulation and weather resistant.
  - k. Compressor type: In case of multiple scroll compressors, the compressors can be fixed/invertor/digital scroll compressors. In case of single compressor solution, the compressor should be digital/invertor scroll compressor only.
  - l. PAC units sustainable for operation on R-410A refrigerant with bottom discharge arrangement consisting of inlet filter, draw through direct drive Electronically commutated (EC) Motors and Backward curved EC fans.
  - m. The refrigerant circuit should have electronically-controlled expansion valve (EEV), solenoid valve for shutting off the refrigerant liquid.
  - n. Motorized Damper with Actuator over the units to avoid short cycling. Damper to be powder coated matching with the color of the units.
  - o. The Outdoor Condenser unit shall comprise of Condenser AC/EC/DC fans & motor, Condenser cooling coil. AC and DC fans should be with fan-speed controllers.
2. Hot Aisle containment CRCA Fabricated at least 2mm thickness and using dedicated insulated return hot air duct to the false ceiling and ducting from the PACs in the PAC room to the compute server room. SERC already has a closed false ceiling in the compute server room. Ducting should be enclosed in this false ceiling
- a. Hot aisle containment with zero leakage of return air from false ceiling using a dedicated insulated return hot air duct. The duct should be fitted with low pressure drop grills to facilitate return of hot air into the PAC unit.
  - b. The ceiling ducts or diffusers should have a minimum of 60% porosity to facilitate exhaust of hot air from the aisle.
  - c. Provision should be made to allow automatic opening of hot aisle doors in the event of power failure or any unanticipated temperature rise, e.g., in case of fire related emergencies, in case of cooling failure etc.
  - d. The hot aisle containment doors should automatically close once normal operation is restored. All safety precautions pertaining to automatic opening and closing of containment doors should be exercised by use of appropriate sensors and control system. Preferably, these sensors should be wired to the PLC in the PAC unit.
  - e. Provision for mounting network trays in the hot aisle should be provided with adequate sealing of the air passage to prevent leakage of hot air through the network cable bays and openings.

- f. Adequate sealing between racks and gaps in the hot aisle should be ensured by use of high-density foam or other suitable demountable material to facilitate service of rack and servers.
- g. Aisle containment curtains with CRCA fabrication must be provided from the top of the racks to the ceiling. Gaps between the racks and other such aisle entry ways and gaps must be sealed with appropriate materials to prevent mixing of hot and cold air. The materials for ceiling should have good fire rating and should be able to withstand air pressure. These parameters should be explained in the technical bid.
- h. Likewise, any gap between the top of the PAC units and the ceiling should be contained for return air.

The scope also includes complete Low side piping work for the PAC and hot-aisle containment solution.

## **3.2 Raised flooring Panels and Fire Resistant Glass Sliding Door**

### **3.2.1 Raised Flooring Panels**

Raised flooring panels in place of existing wooden panels in the compute server room.

**Note:** The compute server room already has stringer based pedestal system. Only the panels will have to be replaced.

The panels must be all metal and Fire resistant. Suitable raised false flooring panels as per prevailing standards should be provided as per site requirements. PAC unit must deliver air into the cold aisle using perforated tiles placed at appropriate locations in the compute server room in the vicinity of the racks.

The entire Access floor system in the compute server room shall be made from high density cementitious board and provide Class O as per BS 476 PART 6 for Fire propagation index and Class 1 as per BS 476 Part 7. Fire Ratings tested as per CIRC 91/61 or BS 476 Part 6 & 7 fire resistance up to 60 min as per NFPA. System should have antistatic property and air leakage resistance.

The panels for the raised floor in the compute server room shall be coated with epoxy coating on the exposed surface. Have an infill of light weight cementitious material. Insulated against heat and noise transfer. Panels shall be finished with High Performance Anti-Static Laminate. Panels will remain flat through and stable unaffected by humidity or fluctuation in temperature throughout its normal working life. Panels will provide for impact resistance top surfaces minimal deflection, corrosion resistance properties and shall not be combustible or aid surface spread of flame. Panels will be insulated against heat and noise transfer. Panels will be 600 x 600mm and fully interchangeable with each other within the range of a specified layout. Panels shall be finished with anti-static 0.9 mm Laminate and thick plastic edge material that is self-extinguishing and will be PVC free.

### 3.2.1 Fire-resistant Glass Sliding Door

The bidder should remove portions of the existing glass partition and provide a fire-resistant glass sliding door with motor and sensors for automatic opening and closing at the location indicated in the layout diagram of Section 4. The door should have the following specifications. Providing and fixing of tested 120 minutes fire rated - integrity and radiation control and partial insulation (EW120) - fully glazed non-load bearing fixed glass partition system with symmetrical (Bi-Directional) fire protection. The glass should be Contraflam Lite or equivalent 14 mm clear 120 min fire rated and partially insulated (EW120), Non Wired Toughened Interlayered glass having a sound reduction of minimum 30 dB and compliant to class 1(B)1 category of Impact Resistance as per EN 12600. The glass shall be able to withstand fire attack from both sides. The glass should be manufactured in UL & TUV audited Facility and including UL Certification. The profiles are manufactured from 1.6 mm galvanized steel sheet pressed and formed to a required profile of the dimension.

**Note:** In the event of power failure or any unanticipated temperature rise, e.g., in case of fire related emergencies, in case of cooling failure etc., the door should automatically unlock but not open and should allow manual opening if found necessary.

Bidder to consider in the scope removal of any existing glass partitions/ wall structure /glass door, existing raised flooring panels and portions of false ceiling in Data center that are needed to be removed and keep in the allocated space provided by SERC, IISc.

### 3.3 Server Racks

Quantity: 7 Nos.

The containment unit should accommodate 10 standard 42U racks in two rows separated by hot aisle containment with 5 racks in each row.

**Note:** Three of the racks will be provided by the department while the other seven racks to be provided by the bidder.

Each rack should be of dimension, 42 U, 600 X 1000 mm with front and rear perforated sheet steel doors. Each rack should be provided with 32A, 3 Phase, high density PDU x 02 nos with 21 Nos of C-13 sockets and 4 nos of C-19 sockets. 2U Closed Hinged Type Cable Manager should be provided in each rack. The racks supplied should be equipped with blanking panels to where servers are not installed to prevent mixing of hot and cold air. Each rack should have 40 1U blanking panels. Each rack density will be between 12-15 KW.

### 3.4 Electrical Components

1. Only the power panel will be provided by the department. All other low side electrical works will have to be provided by the bidder. The low side works must also provision for the optional 3<sup>rd</sup> PAC unit that may be procured and hence must be considered in the costing in the commercial bid.

2. One Emergency Heavy duty exhaust Fan in the Hot Aisle (UPS connected). The exhaust fan should have 4000 CFM with static pressure of 10-30mm of water column. The exhaust fan should be provided with a switch outside the room for manual operation.

### 3.5 BMS-related components

**Note:** The centre does not have a BMS system. The components asked below are only for the concerned rooms. The provisions made should be such that it can be integrated into any BMS system that may be installed in the centre in the future.

MODBUS TCP connection should be provided for these BMS-related components.

- a. **Aspiration system for smoke detection, e.g., VESDA:** The system shall provide 3 field-selectable levels of alarm status: Alert Level 1 (.04% obscuration/ft.), pre-Alarm Level 2 (1.06 % obscuration/ft.) and Alarm Level 3 (2.6% obscuration/ft.). Actual sensitivity levels will be determined in the field and programmed during system commissioning. Alarm Levels 1 and 2 will initiate a Supervisory Condition on the Fire Alarm System, and Alarm Level 3 will initiate the building-wide evacuation sequence.
- b. **Fire detection and alarm system**
- c. **NOVEC 1230 based fire suppression system:** The fire suppression system shall include and not be limited to gas release control panel, CCOE approved seamless cylinders, discharge valve (with solenoid or pneumatic actuator) as the case may be, discharge pipe, check valve and all other accessories required to make a complete operation system meeting applicable requirements of NFPA 2011 standards and installed in compliance with all applicable requirements of the local codes and standards.
- d. **Video Surveillance system:** The NVR based surveillance system with one IP based PTZ camera shall be designed and developed to the following standards: ISO 9001 (2000), ISO/IEC 15504 Level 3 or higher. NVR has to be provided by the bidder. The video backup should be for minimum thirty days.
- e. **Rodent Repellent System**
- f. **Water leak detection system:** It should include electronic alarm modules, water sensing cable, graphic display map, and auxiliary equipment. The system has to be capable of automatically detecting the presence of water at any point across the length of sensing cable. The system should alarm and locate the point of liquid contact on the digital display. This system should be capable of communicating to BMS.

Fire safety and other BMS-related systems needed for both the server and PAC rooms.

### 3.6 BuyBack of Existing PACs

Buyback offer for the existing Stulz Make PACs. 26 TR x 3 Nos. with heater and humidifier (Model – BAS 1002A – 26 TR – 13500 CFM). Year of Purchase: 2007.

The bidder may visit the site to inspect the buyback item.



### **3.7 Warranty**

Comprehensive warranty services for the whole system should be comprehensive and valid for a period of **5** years from the date of installation of the equipment. During the warranty period, the bidder shall attend to all the hardware problems on site and shall replace the defective parts at no extra cost to the purchaser. The comprehensive warranty includes replacement of spares/labour/consumables that may be required.

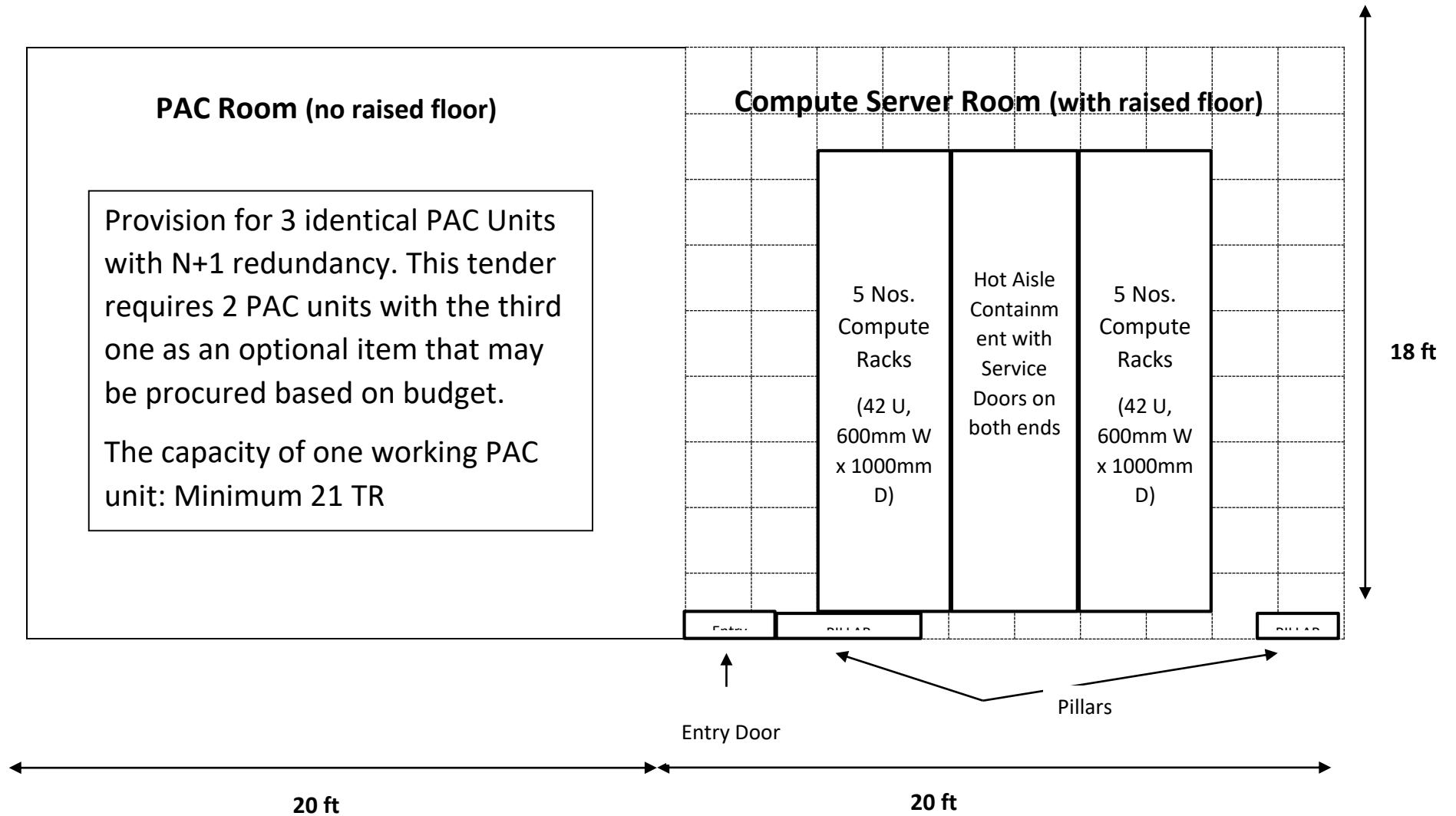
1. The bidder must ensure that the solution proposed, as a total turnkey solution operated by a single bidder, to meet the stated requirements, delivers an uptime guarantee of 95% of the entire system, measured on a monthly basis.
2. In the event of a failure of any of the sub-systems or components of the proposed solution, the bidder must ensure that the defects are rectified before end of the next working day.
3. Failure to meet the above requirement will result in extension of the warranty services by 3 days for delay of each day during the warranty period.
4. Therefore, the bidder along with the OEMs must put systems and processes in place to address the above during the period of the contract

### **3.8 Additional Procurements**

Based on the available budget and prices, an additional 21 TR PAC may be procured for a total of three such PACs. In such a case, the three PACs should be made to operate in either (2 working+1 standby) or (1 working + 2 standby) mode depending on the load conditions. The bidder should oblige to enable these configurations any time during the comprehensive warranty period.

#### 4. SERC Datacenter Layout

OUTDOOR (Outside Building)



## 4.1 More Details on the SERC HPC Room Layout and Power Panels

### PAC Room:

- Height from floor to ceiling = 16 feet 1 inch

### Computer Server Room:

- Height of the raised floor from the true floor, i.e., height below the raised floor = 2 feet 1 inch
- Height from raised floor to false ceiling = 8 feet 10 inches
- Height from false ceiling to the true ceiling, i.e., height above the false ceiling = 5 feet 2 inches

The above two rooms are separated by a soft-board partition.

### Power panels:

SERC will provide the power panels. Following are the specifications of the power panels.

### Power panel for the compute server racks:

- Supplied by: Control Data Corporation. As Power Island, with dual Power supply. One side 230V 50Hz frequency and the other side 110V with 400Hz.
- Can serve up to 100KW on one side.
- The vacant feeders details as follows:
- 20Amps single pole MCBs 1No.
- 16Amps single pole MCBs 19 Nos.
- 40Amps three pole MCBs 1 No.
- 20Amps three pole MCBs 1 No.
- 16Amps three pole MCBs 15 Nos
- This power panel can be located in the PAC room at an appropriate location as suggested by the bidder.
- The cabling from this power panel to the compute server racks will be provided by SERC.
- The other side can also be rewired to take another 100KW load if needed for expansion at a later date.

### Power panel for the PACs:

SERC has two options for the power panels for the PACs which are to be purchased in this tender and to be located in the PAC Room in the data layout. These power panels are located at the basement below the rooms. Cabling of about 30m will be required for connection from the power panel to the PACs in the PAC Room. This cabling will be provided by SERC. Both the options have sufficient power backup provided by SERC. Out-going vacant feeders are connected through MCCBs in both the options/power panels.

Vacant feeder details in the two options (power panels) are as follows.

#### Power panel 1:

- 400A 1 No, 200A 5 Nos, 100A 3 Nos, 50A 7 Nos

#### Power panel 2:

- 200A 6 Nos, 100A 1 Nos, 50A 7 Nos

The appropriate feeders will be selected along with the suitable cable size after the PACs ratings / power specifications received from the successful bidder.

## 5. Technical Details / BoQ Compliance Sheet (to be submitted with Technical Bid)

**Note: DO NOT MENTION THE PRICES IN THIS BoQ COMPLIANCE SHEET. THIS WILL LEAD TO AUTOMATIC DISQUALIFICATION OF THE BIDS.**

SNo	Item Description	[Only answer YES/NO in this column. DO NOT MENTION THE PRICE]	Remark
1	Precision Air Conditioners with Hot Aisle Containment as in Section 3.1		
2	Raised flooring panels and fire resistant glass sliding door as in Section 3.2		
3	Server racks as in Section 3.3		
4	Electrical components including emergency heavy duty exhaust fan as in Section 3.4		
5	BMS-related components as in Section 3.5		
6	Buyback of existing PACSs as in Section 3.6		
7	Five-year Comprehensive Warranty as in Section 3.7		

## 6. Bidder's Eligibility Criteria

1. The bidder must have installed and commissioned a HPC data center cooling system solution at least one during the period January 1, 2018 – December 31, 2020 in a reputable educational or research Institution. If the bidder happens to be a system integrator either the bidder or the cooling system OEM that the bidder has indicated for the current bid should meet this condition; **Supporting Documents Needed:** 1. A copy of the P.O., 2. Completion certificate from the customer indicating the start and end date of installation and commissioning corresponding to the P.O.
2. The bidder must have a proven record of maintaining and managing at least one HPC data center cooling system for a period of 1 (one) year any time between January 1, 2015 and December 31, 2020. **Supporting Document Needed:** 1. Copy of the P.O. or any other documentary evidence mentioning the maintenance 2. A letter from the customer site stating clearly the details of the maintenance/management responsibilities, the specific period and the performance of the bidder. IISc may independently obtain inputs from the provided referees before arriving at a final decision.
3. The bidder is expected to be a company with an annual turn-over of at least Rs. 1 Crores in each of the last 3 financial years. **Supporting Document Needed:** Annual audited balance sheet for 3 years.
4. The bidder must comply with the provisions of Office Memorandum F/No/6/18/2019-PPD dated 23rd July, 2020, issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, GoI.
5. The solution offered must comply with the provisions of Public Procurement (Preference to Make in India) Order No P-45021/2/2017-PP (BE-II) dated 16<sup>th</sup> September, 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI. The minimum local content, the margin of purchase preference and the procedure for preference to Make in India for this tender are as per the mentioned Public Procurement (Preference to Make in India) Order.

## 7. Undertaking in Lieu of Earnest Money Deposit (EMD)

The bidder must provide an Undertaking on bidder's letterhead, in lieu of Earnest Money Deposit (EMD) as per format given in Annexure B subject to the conditions stipulated therein.

## 8. Performance Security or Performance Bank Guarantee (PBG)

The successful bidder(s), on whom order will be placed, has to submit a performance security of 10% of the total order value at the earliest as per Purchase Orders (PO) terms within two weeks from the date of PO. Performance security has to be submitted in the form of RTGS / NEFT / Bank Guarantee/Demand Draft/FDR from any Nationalized/Scheduled commercial Bank in India (as per RBI list) in favour of the Registrar, IISc, Bangalore. The security deposit must be submitted within two weeks of the issue of the Purchase Order, otherwise the order may be cancelled. IISc will issue a formal purchase order to the successful Bidder upon furnishing of the PBG / Security deposit.

Performance security should remain valid for a period of three months beyond the date of completion of all contractual obligations (including warranty period) of the successful bidder. No interest will be payable by IISc, Bangalore on the Performance Security deposited. In case the contractor fails to provide satisfactory service or supply, the Performance Security

submitted by the bidder is liable to be forfeited. The PBG will be forfeited in case of violation of any terms & conditions of the purchase order or agreement done thereof by the successful bidder. An undertaking to this is to be submitted.

## 9. Acceptance Criteria

1. The bidder must demonstrate the following at the time of acceptance of the installation and commissioning.
  - a. PACs: The capacity measurement in TR, NVH level of each PAC using standard measurements, drip tray for condensate collection, measurement of CFM with a flow grid or a flow hood at the time of commissioning, logging capacity of PLC as in Section 3.1.g, switching capacity in PLC as in Section 3.1.h, compressor type as in Section 3.1.k.
  - b. Hot aisle containment: As in Sections 3.2.c and 3.2.d.
  - c. Integrated operations of smoke detection, fire alarm and fire suppression systems.
  - d. Water leak detection system.
2. It is to be noted that maximum of two weeks will be available (after Installation & Commissioning) to the bidder to conform to this acceptance test criterion set out.
3. Any delay in commissioning or conformance to the acceptance beyond the stipulated time will result in extending the warranty: each day of delay would result in 3 additional days of warranty.
4. This penalty clause is only applicable for solutions which are considered as technically meeting the requirements, as evaluated by the technical committee. The clause cannot therefore be used as an argument to qualify any solution, which the technical committee considers as not meeting the requirements.

## 10. General Terms and Conditions

1. Offer must be submitted under TWO-BID system i.e. “Techno-commercial (i.e. Technical) bid” and “Price (Financial) bid” in **e-tender mode through CPPP followed by hard copy submissions of the technical bid to the indicated mailing address** within the stipulated periods. Bids sent through Email / Fax will not be accepted and such bids will be treated as non-responsive bids.
2. The vendors may communicate to the committee through the CPPP and to the email ID provided in the first page, which will be the official email for the purpose of this tender. However, the communications from the committee will be made only in pre-bid clarification meeting and through CPPP including corrigendum and short fall requests. While the committee may consider the emails from the vendor, the committee will respond/communicate by email from only the official email ID only when absolutely necessary including for example, arranging site visits, arranging possible technical presentations and calling the successful bidder for further discussions. In all other circumstances, no responses or communications will be made by the committee via email or any other means.
3. Any clarifications required by the committee will be sought in possible technical presentations that may be held and/or shortfall requests via CPPP. The shortfall requests will precisely point to the tender clauses that are not met by the technical bid. It is the bidder’s responsibility to address the shortfall by submitting an adequate and satisfactory shortfall

response via CPPP. No clarifications by email or any other means will be sought or given by the committee.

4. The technical evaluations will be made only based on the technical bids and the shortfall responses submitted by the bidder.
5. IISc reserves the right to cancel the tender at any time without assigning any reason whatsoever.

## 11. Organization of the Technical Bid

The technical bid should strictly be organized in the following sequence only.

**Note:** IISc reserves the right to disqualify any bid that does not provide all the required data and not following the organization given below.

1. A cover letter from the bidder. Among other things, the cover letter should certify that all the requirements of the tender are provided and the offered solutions meet and comply with the technical and other specifications of the tender. The cover letter should also certify that the primary bidder will be responsible for offering the total turn-key solution in meeting all the tender specifications.
2. Undertaking in lieu of EMD as per the format in Annexure B.
3. Technical details/BoQ compliance sheet as in Section 5.
4. Table of Contents page listing only the items below, i.e., the items 5-20 and their corresponding page numbers in the pdf document.
5. A two-column table listing the OEM for each of the tender components in a separate page. Only one OEM should be specified for a component.
6. A table listing the Make and model for each of the components.
7. Manufacturer Authorization Forms (MAFs) or letters from the OEMs to the bidder for each of the components.
8. The copy of registration certificate or a declaration in compliance with the provisions stipulated in office memorandum F/No/6/18/2019-PPD dated 23 July 2020 issued by Public Procurement Division, Dept. of Expenditure, Ministry of Finance, GoI.
9. Certificates from bidder, as per format given in **Annexure D**, declaring the country of OEM, country of manufacture, location of local value addition and percentage of local contents for Precision Air Conditioners, hot aisle containment, raised flooring panels, fire resistant glass sliding door, server racks, exhaust fan and the BMS-related components, overall percentage of the turnkey solution and compliance with the provisions of Public Procurement (Preference to Make in India) order No. P-45021/2/2017-PP (BE-II) dated 16<sup>th</sup> September, 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI. **Note: Bids without this information in Annexure D will be summarily rejected.**
10. The bidder must not be blacklisted by any Central / State Govt. Organizations of India as on date of submission of the bids. A certificate or undertaking to this effect must be submitted.
11. Only one proof, with the corresponding supporting documents, each for clauses 1 and 2 of the Bidders Eligibility Criteria
12. Precision Air Conditioners
  - a. Product specification sheet(s) where the specifications mentioned in Section 3.1, wherever available, are highlighted.
  - b. Software selection sheet showing the following specifications and where these specifications are highlighted. If the software selection sheet does not show some of the specifications, the compliance and details of those specifications should be given in separate sheets following the software selection sheet
    - i. Number of PAC units and Capacity in TR of each PAC unit.
    - ii. Item 3.1 a

- iii. Item 3.1 d
  - iv. Item 3.1.f
  - v. Item 3.1.k – Compressor type and number of scrolls
  - vi. Item 3.1.l
  - vii. Item 3.1.o
13. Hot aisle containment solution
    - a. Confirmation on hot aisle containment with ducting for supply and return air.
    - b. Confirmation and details on the operations of hot aisle doors and fire-resistant door to the room.
    - c. Plans for sealing to prevent leakage between the top of the racks and the ceiling.
  14. Server racks
    - a. Product specification sheet(s)
    - b. Tonnage or load capacity of the racks, both for static and rolling loads.
  15. BMS-related components
    - a. Confirmation that MODBUS TCP connection will be provided for all the components.
    - b. Product specification sheets for aspiration system for smoke detection, fire alarm system, NOVEC 1230 based fire suppression system, video surveillance system rodent repellent system and water leak detection system.
  16. Design layout CAD diagrams showing placement of racks, hot aisle containment, risk mitigation in terms of power failure and in case of fire and plans for integration of the BMS-related components to a possible future BMS system.
  17. Clear demarcation of the responsibilities between the bidder and the OEMs.
  18. Terms and conditions of the offer.
  19. A certificate agreeing to all the terms and conditions mentioned in the tender.
  20. Appendix
    - a. Company Profile Documents, if desired by the bidder or OEM (Maximum 2 pages each for the bidder and the OEMS).
    - b. Proof for Bidder's Eligibility Criteria Clause 3: Annual audited balance sheet for 3 years.
    - c. Installations by the bidder/OEMs and maintenance/management by the bidder in other sites.
    - d. Supporting technical materials including brochures.
    - e. Any other information or documents that the bidder/OEMs deem necessary.

## 12. Technical Bid – Terms and Conditions

1. Technical bids should be submitted through **online e-tender mode in the specified format on CPPP**. This should be followed by **hardcopy submission of only the technical bid (and not commercial bid)** to the mailing address.
2. The technical bid should contain all the information and should have the organization as given in Section 11. Bids without the specific information and organization as in Section 11 will be automatically disqualified.
3. Vendors who include price information in the technical bids will be automatically disqualified.
4. Technical bids will be opened first. IISc may seek clarifications after opening of technical bids. Vendors may be required to give presentations.



## 13. Commercial Bid – Terms and Conditions

1. Priced Bill of Quantities should be submitted only through **online e-tender mode in the specified format on CPPP. No hardcopy of commercial bids should be submitted. Hardcopy submission of commercial bids will lead to disqualification of the bids.**
2. Price bids of only technically qualified vendors will be considered. Commercial bid shall be opened for the technically qualified bidders after the technical evaluation.
3. The hardcopy commercial bid of the successful bidder, after the commercial bid opening stage, should contain the unit prices of each PAC unit, each server rack, each BMS-related component and exhaust fan.
4. The hardcopy commercial bid of the successful bidder, after the commercial bid opening stage, should contain among other things, unit prices, payment terms, warranty, installation, commissioning etc. as per requirements of IISc mentioned in the tender document. All such conditions must be in line with the tender. In case of any deviation or conditional offer, the bid may be treated as non-responsive and not be considered for evaluation.
5. Prices should be quoted only in INR and will be with GST only. The order must be on FOR basis. No Custom Duty Exemption Certificate will be provided.
6. The component of tax, and any other statutory levies should be shown separately and not included in the total amount, to enable IISc to avail any exemption.
7. Proposals should contain the name and contact details, viz., phone, fax and email of the designated person to whom all future communication will be addressed. The contact details should also be mentioned on the overall envelope.
8. Prices should be quoted in detail, for all the subsystems given in the Technical Specifications part of the tender. Further, bid and price validity should be for six months from the date of opening of the technical bids.
9. IISc will place the purchase order only on the successful bidder as per the decision of IISc. In this regard, decision of IISc will be final and binding.

## 14. Payment Terms

1. The total project cost will consist of Equipment supply and installation and comprehensive warranty for five years from the acceptance and successful installation as decided by IISc.
2. 100% payment shall be released by IISc against delivery, inspection, successful installation, commissioning and acceptance of the equipment at IISc Bangalore in good and functional condition and to the entire satisfaction of the Purchaser (IISc) and on production of unconditional performance bank guarantee of 10% of the total order value valid two months beyond all contractual obligations.
3. Payment will be subject to deduction of TDS as per rules / laws and any other deduction as per PO terms.
4. The total solution as per the agreed bill of materials must be supplied within 4 – 6 weeks after receiving a firm PO from IISc. The installation and acceptance must be completed within 2-3 weeks after supply of the equipment.
5. Liquidated Damage: As time is the essence for this procurement, hence the ordered materials are required to be delivered and installed in all respects within the stipulated period in the purchase order failing which penalty for late delivery and installation will be imposed at the rate 1% of the total order value per week or part thereof for the delayed period subject to maximum of 10% of the total order value and this liquidated damage will be deducted during the payment of the invoice / bill of the supplier. Earliest / expected delivery period should be clearly indicated in the technical bid.

## 15. Important Dates

1. Release of tender: February 5, 2021.
2. Last date for sending queries: February 15, 2021, 5 PM. Queries may be sent to [tender.serc@iisc.ac.in](mailto:tender.serc@iisc.ac.in)
3. Release of corrigendum to the tender based on the queries, if necessary: February 17, 2021, 9 AM IST.
4. Start date for submission of the bid through CPPP: February 17, 2021, 11:59 AM IST through online mode of CPPP.
5. Last date for submission of the bid through CPPP: March 4, 2021, 11:59 AM IST through online mode of CPPP.
  - a. The hard copy of the technical bid should be submitted and reach the below-mentioned mailing address by March 9, 2021, 6 PM IST. Note that the hard copy should exactly match with the soft copy submitted through the CPPP. No hardcopy of commercial bid should be submitted. Hardcopy submission of commercial bid will lead to disqualification of the bid.
6. Opening of the technical bids: March 5, 2021, 11:59 AM IST through online mode of CPPP.
7. [Optional] Presentation by bidders or Technical Clarification Meet with the bidders, if required: Will be intimated.
8. Requesting for shortfall through CPPP: Will be intimated via CPPP.
9. Shortfall response by the bidders: Will be intimated via CPPP.
  - a. The hard copy of the shortfall response should be submitted and reach the below-mentioned mailing address within three days from the submission of the shortfall through the CPPP. Note that the hard copy should exactly match with the soft copy submitted through the CPPP. No hardcopy of commercial bid should be submitted. Hardcopy submission of commercial bid will lead to disqualification of the bid.
10. Opening of the commercial bids: Will be intimated via CPPP.

### **Mailing address:**

Chair  
Supercomputer Education and Research Centre (SERC)  
Indian Institute of Science (IISc)  
Bangalore – 560012  
India

## 16. Annexure A – List of Recommended Makes

The following list is indicative only. The items offered must comply with the Public Procurement (Preference to Make in India) ORDER NO. P-45021/2/2017-PP (BE-II). dated 16<sup>th</sup> September, 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI.

SNo	Item	Recommended Makes
1	Precision Air Conditioners with necessary low-side works	Schneider Electric / Vertiv / Stulz / Bluebox / Climaveneta
2	Server racks	APC/Legrand/Vertiv/WQ India/Netrack/Valrack.
3	Glass for door	SAINT GOBAIN, Schott, Pilkington
4	Fire Resistant Glass Sliding Door	Shakti Mat, Radiant, ProMat, Godrej
5	Fire alarm system	Tyco, Honeywell, Siemens, Schneider
6	Aspiration smoke detection system	Xtralis, ICAN, Tyco, Honeywell, Siemens, Securiton
7	NOVEC 1230 based fire suppression system	Ansul, UTC, Tyco, Siemens
8	Video Surveillance system	Honeywell, Hikvision, Samsung, Bosch, Pelco
9	Rodent Repellent System	MASER (Tarrant Range), C Systems, Verma Craft, Star Electronics
10	Water leak detection system	Tracetek, Liebert, Sontay, Star Electronics

## 17. Annexure B - Undertaking

Date:

To:

The Chair  
Supercomputer Education and Research Centre  
Indian Institute of Science  
Bangalore – 560012, India

**Subject: Undertaking as per GFR – 2017, Rule 170(iii)**

Dear Sir,

We, the undersigned, offer to carry out the `Turn-key` project including Products/items, components etc. as per tender at SERC, IISc, Bangalore, in response to your Tender No IISc/Purchase/SERC/2021/1. We are hereby submitting our proposal for the same, which includes Technical bid and the Financial Bid through [www.eprocure.gov.in](http://www.eprocure.gov.in). As a part of the eligibility requirement stipulated in the said tender document, we hereby submit a declaration in lieu of Earnest Money Deposit (EMD), as given below:

1. We will not withdraw or amend or modify or impair or derogate the our bid partly or fully or any condition of it after tender opening, during the period of tender validity (six months from the date of opening of the technical bid),
2. In case, we are declared as successful bidder and an order is placed on us, we will submit the acceptance in writing within 7 days of placement of order on us.
3. In case, we are declared as successful bidder and an order is placed on us, we undertake, to submit the required Performance Security / Performance Bank Guarantee (PBG) /Security deposit within two weeks from the issue of the Letter of Intent / Purchase Order.
4. In case of failure on our part to to deliver/provide the item/installation/service as per the order's terms and conditions within the stipulated period, we are aware that we shall be declared as ineligible for the said tender and /or debarred from any future bidding process of IISc or any Government entity for a period of minimum one year.
5. The undersigned is authorized to sign this undertaking.

Yours sincerely,

Authorized Signatory:

Name and Title of Signatory:

e-mail:

Mobile No:

## 18. Annexure C - Format for Performance Security

### **FORMAT FOR BANK GUARANTEE FOR PERFORMANCE SECURITY (PERFORMANCE BANK GUARANTEE)**

To  
The Registrar  
Indian Institute of Science (IISc)  
Bangalore – 560 012 (Karnataka, India)

**Subject:** Performance Bank Guarantee (PBG)

**Reference:** IISc. Purchase Order No. \_\_\_\_\_  
dated \_\_\_\_\_

Dear Sir,

1. We hereby issue a Bank Guarantee as follows: -

Bank Guarantee No. \_\_\_\_\_ Date: \_\_\_\_\_

Amount of Guarantee Rs. \_\_\_\_\_

Guarantee covers From \_\_\_\_\_ To \_\_\_\_\_

Last Date for Lodgement of Claim: \_\_\_\_\_

2. This deed of Guarantee executed by the (Name of the Bank: \_\_\_\_\_)

constituted under \_\_\_\_\_ Act, \_\_\_\_\_ having its  
Central Office at \_\_\_\_\_

\_\_\_\_\_ and amongst other  
places a branch at \_\_\_\_\_ (hereinafter  
referred to as "The Bank") in favour of The Registrar, Indian Institute of Science,  
Bangalore – 560 012 (hereinafter referred to as IISc) for an amount of not  
exceeding Rs. \_\_\_\_\_ (in words:

Rupees. \_\_\_\_\_ only) at the request of  
M/s \_\_\_\_\_ (hereinafter referred to as the  
"Contractor" / "Supplier").

3. In consideration of The Registrar, Indian Institute of Science, Bangalore – 560 012  
(hereinafter called IISc) having entered into an agreement vide IISc's Purchase  
Order No. \_\_\_\_\_ dated \_\_\_\_\_ with M/s  
\_\_\_\_\_ (hereinafter called the Supplier) to carry out the supply and  
installation of the \_\_\_\_\_

\_\_\_\_\_ <Name of the  
equipments/work/Job> at Indian Institute of Science, Bangalore as per their above  
order, the Supplier agreed to execute a Bank Guarantee for 10% of the total order  
value viz. Rs. \_\_\_\_\_ (in words: Rupees  
\_\_\_\_\_ only) towards Performance  
Security / Performance Guarantee obligation for a period of \_\_\_ year(s) /  
month(s) from \_\_\_\_\_ to \_\_\_\_\_.

4. We, the \_\_\_\_\_ Bank, \_\_\_\_\_ Branch (hereinafter referred to as a Guarantor) at the request of the supplier, irrevocably undertake to indemnify and to keep indemnify IISc. without any demur to the extent of Rs. \_\_\_\_\_ (in words: Rupees \_\_\_\_\_ only) in the event of the aforesaid Supplier failing to comply the Warranty / contractual Obligations as per the agreed terms to the full satisfaction of the Company as mentioned in the IISc.'s purchase order.
5. NOW THIS BANK HEREBY GUARANTEES that in the event of the said Supplier failing to abide by any of the conditions referred in tender document / purchase order / performance of the equipment / Machinery / service, etc. this Bank shall pay to Indian Institute of Science, Bangalore on demand and without protest or demur Rs ..... (in words: Rupees.....only).
6. We \_\_\_\_\_ Bank, further agree that the Guarantee herein contained shall remain in full force and affect during the period that would be taken for the performance of the equipment and / or services as stated in the Purchase Order issued by IISc. and that it shall continue to be enforceable till the completion of the period and certified that warranty and contractual obligations have been fully carried out by the supplier and accordingly discharges the Guarantee subject. However, IISc. shall have no right under after the expiry of the Guarantee, i.e. \_\_\_\_\_(date).
7. We, \_\_\_\_\_ Bank undertake not to revoke this Guarantee, during its currency except with the previous consent of IISc. in writing.
8. Notwithstanding anything contained herein,
  - (a) Our liability under the Bank Guarantee shall not exceed Rs. \_\_\_\_\_ (in words: Rupees \_\_\_\_\_ only).
  - (b) This Bank Guarantee shall be valid up to \_\_\_\_\_.
  - (c) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if IISc. serve upon us a written claim or demand on or before expiry of date (i.e. \_\_\_\_\_).
9. NOTWITHSTANDING anything contained herein above, our liability under this Guarantee is restricted to Rs. \_\_\_\_\_ (in words: Rupees \_\_\_\_\_ only) our guarantee shall remain in force until. Unless a Demand or claim under the guarantee is made on our Bank in writing on or before \_\_\_\_\_ all your rights under the said guarantee be forfeited and we shall be relieved and discharged from all liabilities thereunder.
10. This Bank further agrees that the decision of Indian Institute of Science, Bangalore as to whether the said Supplier has committed a breach of any of the conditions referred in tender document / purchase order shall be final and binding.
11. This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at ..... situated at ..... (Address of local branch) as following details:

Name of the Bank	
Branch Name	
Branch Code	
IFSC Code	
E-mail Id	
Phone/Mobile Number	

Seal & Signature of the Bank

## 19. Annexure D – Certificate from Bidder related to Make in India Orders

To:  
 The Chair,  
 Supercomputer Education and Research Centre (SERC),  
 Indian Institute of Science (IISc)  
 Bangalore – 560012

We hereby certify that the goods being offered by us vide our proposal, comply with the provisions of Public Procurement (Preference to Make in India) Order No P-45021/2/2017-PP (BE-II), dated 16<sup>th</sup> September, 2020 issued by Public Procurement Section, Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, GoI.

We hereby certify the details pertaining to goods offered by us, as given below:

SNo.	Item Description	Make & Model No.	Country of Origin of OEM	Country and Location of Manufacture of Item	Location in India at which local value addition is made, if any.	Percentage of Local Content
1	Precision Air Conditioners					
2	Hot Aisle Containment					
3	Raised flooring panels					
4	Fire resistant glass sliding door					
5	Server racks					
6	Exhaust fan					
7	BMS-related: Aspiration system for smoke detection					
8	Fire detection and alarm system					
9	NOVEC 120 based fire suppression system					
10	Video surveillance system					
11	Rodent repellent system					
12	Water leak detection system					



**Note 1:** Please enclose certification from the OEM on the above for their respective item(s) provided in this tender.

**Note 2:** If a product is manufactured in India under a license from foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content, please enclose the relevant agreement copies.

Self-certification on Compliance to Make-in-India Order:

1. We certify that the local content of the overall turnkey solution offered in our bid is \_\_\_\_\_(specify in percentage).
2. We also certify that the turnkey solution offered meets the local content requirement for ‘Class-I local supplier’/‘Class-II local supplier’ [tick one and strike out the other], as per the Public Procurement (Preference to Make in India) Order.

We also certify that, we are not from a country sharing land border with India as defined in order No. F/No/6/18/2019-PPD dated 23 July 2020 issued by Public Procurement Division, Dept. of Expenditure, Ministry of Finance, GoI and the goods offered by us comply with the provisions of said order.

For (Name of bidder)

Authorized Signatory  
Name & Designation:  
Mobile No: