



# भारतीय प्रौद्योगिकी संस्थान कानपुर Indian Institute of Technology Kanpur

पदार्थ विज्ञान एवं अभियांत्रिकी विभाग  
DEPARTMENT OF MATERIALS SCIENCE & ENGINEERING

अमरेन्द्र के. सिंह  
प्राध्यापक

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**Enquiry No.: MSE/AKS/INH/SCSR/2021/01**

**Bid Start Date: December 23, 2021**

**Bid End Date: January 03, 2022**

We are interested in purchasing **Integrated Data Center Infrastructure / Intelligent Racks – 2 Racks** having specifications along with our terms and conditions appended below (Page 2 – 8); sealed quotations are invited for the same. *All the quotations and supporting documents should reach the undersigned latest by 05:00PM on 3rd January, 2022.*

**Quotations shall be in two parts:**

(i) **Part-I (Technical):** This should contain all the technical details cum specifications, supporting documents requested, general arrangement drawings and sample images of the products. Technical compliance of the above specification and makes should be clearly specified. It should contain unpriced bid along with terms and conditions, warranty, taxes etc. This should be submitted inside a sealed envelope and marked as “Technical Bid.”

(ii) **Part-II (Financial):** The commercial bid of the above items, containing pricing along with commercial terms and conditions, should be submitted inside another sealed envelope and marked as “Financial Bid.”

*For bid related queries, bidders are requested to send emails to [icmehub@iitk.ac.in](mailto:icmehub@iitk.ac.in) from their official email ids only within 3 days after bid start date (i.e. December 26, 2021); no query shall be entertained thereafter.*

**Prof. Amarendra Kumar Singh**  
**Dept. of Materials Sc. and Engg.**  
**IIT Kanpur, INDIA - 208016**

**Technical Specification for:  
Integrated Data Center Infrastructure / Intelligent Racks – 2 Racks**

Sl. No.	Description	Bidder shall state as: Fully Complied/ Not Complied
1.1	<b>Make:</b>	
1.2	<b>Model No.:</b>	
1.3	<b>Scope of Work</b>	
1.4	This specification covers intelligent integrated/inbuilt infrastructure, standalone system design, engineering, manufacture, assembly, testing at manufacturer's works, supply, delivery at site, unloading, handling, proper storage at site, erection, testing and commissioning at site of complete infrastructure for the proposed Data Centre to be installed at IIT Kanpur, as detailed in the specification, complete with all accessories required for efficient and trouble free operations.	
1.5	Modular and scalable design for power and cooling : All the critical components used to design the system should be redundant and in the Events of failure the components can be maintained easily. All the components of the infrastructure should be such that it can be easily dismantled and Relocated to different location.	
<b>2</b>	<b>Requirements</b>	
2.1	Intelligent Integrated Infrastructure with inbuilt hot and cold aisle containment of 2 racks should cater IT load up to 16 kVA in total	
2.2	Intelligent Integrated Infrastructure essentially should include internal redundant or backup power supplies, environmental controls (Rack mounted air conditioning, fire detection, smoke detection, Water leak detection and humidity sensors), and security devices. Critical system like rack mounted air-conditioning system should have N+1 topology. Environmental monitoring shall be done from IP based software.	
2.3	The detail specifications of the intelligent integrated/inbuilt infrastructure, standalone system shall be in adherence to standard Data Centre guidelines thus shall be composed of multiple active power and cooling distribution paths, but only one path active. Shall have redundant components.	
<b>3</b>	<b>The Intelligent integrated Infrastructure shall have following components:-</b>	
3.1	<b>Rack based closed loop Air-Conditioning</b>	
3.1.1	The server racks should be equipped with rack based cooling units to provide closed loop cooling system which should be able to cool the equipment's uniformly right from 1st U to 47th U of Rack	
3.1.2	Rack mounted Air Cooling unit should be of 7kW/2TR capacity in N+1 topology (i.e. 3 nos. of 7kW/2TR rack mounted cooling unit in N+1 redundancy). One unit should not take more than 9U space of rack height. <b>Rack based Air Conditioner should have following Features:</b> <ul style="list-style-type: none"> <li>• Cooling System should be DX type in N+1 Topology</li> <li>• Indoor unit of the cooling system should house EC fan</li> <li>• Outdoor Unit</li> </ul>	
3.2	<b>Power Distribution</b>	
3.2.1	Each rack should have at least 2nos of single phase 32 Amps input power distribution units (PDUs). <ul style="list-style-type: none"> <li>• PDU should be integral part of Rack.</li> <li>• Each PDU should connect to a minimum of 20 number C13/C14 sockets and 3 numbers C19 sockets.</li> <li>• Thus each rack should have 2 PDUs for power input.</li> <li>• Each PDU should have Cu cables of full rated current capacity and with length of 3 meters with male and female connector.</li> </ul>	



3.3	<b>Electrical system-POD</b>	
3.3.1	Wall mounted / rack mountable Power Output Device with essential breakers to be provisioned.	
3.4	Blanking Panel: 75%	
3.5	<b>Environmental Controls</b>	
3.6.1	Each set of intelligent rack (02 Nos.) should include basic environmental controls: <ul style="list-style-type: none"> <li>• Smoke cum Fire Detector</li> <li>• Water Leak Detection system</li> <li>• Temperature/ Humidity Sensor</li> <li>• Door Sensor</li> <li>• Alarm beacon</li> </ul>	
3.7	<b>U Space</b>	
3.7.1	Intelligent racks should have a minimum of 64 U(total) space available for IT equipment's and network equipment with all cooling units inside the racks in N+1 redundancy.	
3.7.2	<b>Racks</b>	
	47 U racks of dimension 800 mm x 1100 mm (02 numbers)	
3.7.3	<b>Monitoring</b>	
3.8.1	The intelligent racks (2 Nos.) should have IP based monitoring facility of all the passive parameters inside racks.	
3.8.2	Capable for Email and SMS Alerts	
3.8.3	Rack mountable monitoring unit should take 1U rack space	
3.9	<b>Other features:</b>	
3.9.1	The Intelligent integrated infrastructure should provide much functionality and some of the key functionalities are - Cold Contained Front Aisle & Rear Contained Hot Aisle, insulation, remote management and single point of service.	
3.9.2	Biometric access control system should be provided to control the rack door access.	

**Detailed Specification of Components:**

3.10	<b>Rack based Air Conditioning System of 7kW Capacity (03 nos. in N+1)</b>	
3.10.1	<b>Configuration</b>	
	Supply, installation, testing and commissioning of 7 kW rack mounted cooling Type Air-conditioning Units designed specifically for high sensible heat ratio to be installed in the integrated cabinet for effective and uniform distribution of cooling. Cold air will be supplied to the cold aisle containment of the integrated cabinet and the hot air will be taken from the hot aisle containment of the cabinet.	
3.10.2	<b>High sensible cooling unit with 100% duty cycle</b>	
3.10.2.1	Cooling capacity of 7 kW	
3.10.2.2	Split indoor & Outdoor unit design	
3.10.2.3	Cooling Unit integrated in rack, 19" mountable not more than 9U	
3.10.2.4	Scroll compressor for high reliability	
3.10.2.5	Electronically commutated centrifugal evaporator fan for high energy efficiency	
3.10.2.6	Air flow suitable to rack equipment from bottom to top discharge in vertical direction	
3.10.2.7	Thermal insulation on indoor unit	
3.10.2.8	Under voltage and Overvoltage protection for equipment safety	
3.10.2.9	High Pressure & Low Pressure protection for safe operation	

3.10.2.10	Washable filter with 80% efficiency down to 20 micron rating and HDPE media/ Polyester synthetic media.	
3.10.2.11	Flare type Thermostatic Expansion Valve for easy serviceability	
3.10.2.12	Refrigerant R407C/R410A compatible	
3.10.2.13	Hydrophilic evaporator coil	
3.10.2.14	Individual breakers at indoor and outdoor unit for protection	
3.10.2.15	Flexible copper piping for easy indoor to outdoor connection at rack level	
3.10.2.16	ON/OFF switch at indoor unit for emergency purpose	
	<b>Scope of Work</b>	
	<p>a. Mounting of RCU (03 nos.) in a rack space (9U for each unit)</p> <p>b. Provision to mount servers of dimension 450mm (Width) x 650 mm (Depth) 20 numbers and 450mm (Width) x 740mm (Depth) 20 numbers along with the rail kits and accessories needed</p> <p>c. Laying gas pipeline &amp; water drainage line.</p> <p>d. Provision to mount rack based NOVEC 1230 fire suppression system in future with required mounting accessories.</p> <p>e. Outdoor unit location will be provided by customer outside room and the vertical distance between indoor to outdoor unit must not exceed 10 meters.</p> <p>f. Powering the device for indoor as well as outdoor unit along with necessary cable connectivity &amp; insulation material Installation, refrigerant charging, testing &amp; commission under vendor scope</p>	
3.11	<b>Racks &amp; Accessories</b>	
	Each Rack is 47 U 19" mounting type with 2300 mm (Height) x 800 mm (Width) x 1100 mm (Depth)	
	Rack frame is, scalable and modular with safe load carrying capacity of 1400 Kg on enclosure frame and 1000 Kg on 19" mounting angles.	
	Color shade of Rack is RAL 9005 with textured finish	
	Base plinth with 100 mm height	
	Cable entry provision from top & bottom both side of rack	
	Cut outs with rubber grommet on top and bottom cover of rack for cable entry	
	Vertical Cable manager on both LHS & RHS on rear side	
	Front Glass door for complete 47U height visibility and rear plane door with stiffener for strength	
	Thermally insulated cold aisle chamber	
	75% of Blanking panels to prevent air mixing	
	LED light to be provided on each rack	
3.12	<b>Safety and Security Systems</b>	
3.12.1	<p><b>Biometric Based Access Control</b></p> <p>The IP based Access Control System shall be used to serve the objective of allowing access to authorized personnel only. The system deployed will be based on Biometric Technology. The front rack doors will be provided with magnetic locks and will operate on fail-safe principle through one common Biometric access control system. Rear doors will be operated through mechanical lock &amp; key mechanism.</p> <p>The system would be designed and implemented to provide following functionalities:</p> <ul style="list-style-type: none"> <li>• Configurable system for user defined access</li> <li>• Built-in Real Time Clock (RTC), calendar; complete Database stored locally and shall be capable of operating offline on standalone mode</li> <li>• Record, report and archive each and every activity (permission granted and / or rejected) with log formats</li> </ul>	



	<ul style="list-style-type: none"> <li>Fail safe operation in case of no-power condition and abnormal condition such as fire, theft, intrusion, loss of access control, etc.</li> <li>At the biometric reader, user presents the finger to the biometric reader which is unique to each employee. The pattern is read and compared with stored data to grant / deny access.</li> </ul>	
3.12.3	<b>Rodent Repellent system</b> Racks to be covered with rodent repellent system	
3.13	<b>Monitoring</b> Supply and installation 1U rack mountable monitoring system with Sensors & notification system. The system shall continuously collect critical information from network connected devices such as, temperature & humidity sensors, Water Leak sensor and other dry contact monitoring. Beacon & Buzzer-Sound and Flash Led Alarm. Based on pre-set parameters, automated email alerts are sent to the intended recipients and mobile app-based monitoring.	
	Intelligent Rack environment remote monitoring	
	Modbus 485 Communications	
	SNMP Communication	
	Single window for monitoring all sensors	
	Data and logs of historical information of alarms and notification	
	Temperature & Humidity Sensor, Door Sensor, WLD Sensor, Smoke Detection sensor. Alarm device with LED flash and sound option	
3.15	<b>Electrical System (POD Device – Wall / Rack Mounted ):</b> Wall mounted / rack mountable Power Output Device with essential breakers to be provisioned	
	a. Wall mounted /19" rack mountable Power Output Device with essential breakers.	
	b. All input supply cables from POD unit to equipment's are connected with industrial socket (male - female) with suitable rating	
	c. Supply & laying of Power input cable up to the electrical DB & termination of the same to be done by IIT Kanpur.	
<b>4</b>	<b>Additional Requirements</b>	
4.1 Accessories	<input type="checkbox"/> Tool Less 1U height blanking plates should be placed in empty slots. <input type="checkbox"/> The OEM should include mounting hardware at each U space for equipment fixing. <input type="checkbox"/> Vertical Cable manager on both LHS & RHS on rear side. <input type="checkbox"/> Cable entry provision from top & bottom both. <input type="checkbox"/> Cut outs with gland plate/ rubber grommet/ brush grommets on top and bottom for cable entry.	
4.2 Rack Standard	Racks should conform to DIN 41494 Standard and / or EIA 310 and / or Rack should conform to IEC 297 standards	



4.3 OEM Standards	<ul style="list-style-type: none"> <li>• Rack manufacturers should comply with ISO 9001, 14001, 27001 and 45001</li> <li>• The OEM of the proposed solution should have at least 3 years of experience in executing similar works (Similar works means – “SITC of Integrated rack Data Centre infrastructure”) in Central/State/PSU Organizations.</li> <li>• The OEM must have executed minimum 5 Integrated Rack Data Centre projects during the last 3 years from the of bid submission date.</li> <li>• The OEM should have at least three qualified and experienced DC certified professionals like CDCP/CDCS/CDCE/ATD on their company payroll with minimum 3 years’ experience in Data Centre designing and implementation</li> <li>• The Project Manager proposed from bidder must have a minimum 5 years of experience in executing &amp; managing Data centre projects. (CV along with Client reference to be provided).</li> <li>• OEM shall be present in Gartner Competitive Landscape Research Report for Edge in the Micro Modular Data Center Market as Leader in Data Center Facilities Specialist.</li> <li>• OEM or Manufacturer of the offered goods/ equipment’s should have manufacturing facility in India &amp; company registered under the companies Act since last 10 years. Valid company registration certificate should be submitted</li> </ul>	
4.4 General Arrangement Drawings	General arrangement drawings and sample images of the products have to be submitted	
4.5 Additional Documents	<ul style="list-style-type: none"> <li>• <b>Bidder financial standing:</b> The bidder should not be under liquidation, court receivership or similar proceedings, should not be bankrupt. Bidder to upload undertaking to this effect with bid.</li> <li>• Bidders shall quote only those products in the bid which are not obsolete in the market and has <b>at least 3 years residual market life</b> i.e. the offered product shall not be declared end-of-life by the OEM before this period.</li> <li>• Bidders are advised to check <b>applicable GST</b> on their own before quoting. Buyer will not take any responsibility in this regards. GST reimbursement will be as per actuals or as per applicable rates (whichever is lower), subject to the maximum of quoted GST %.</li> <li>• <b>Data Sheet of the product(s)</b> offered in the bid, are to be uploaded along with the bid documents. Buyers can match and verify the Data Sheet with the product specifications offered. In case of any unexplained mismatch of technical parameters, the bid is liable for rejection.</li> <li>• <b>Malicious Code Certificate:</b> The seller should upload following certificate in the bid:- (a) This is to certify that the Hardware and the Software being offered, as part of the contract, does not contain Embedded Malicious code that would activate procedures to :- (i) Inhibit the desires and designed function of the equipment. (ii) Cause physical damage to the user or equipment during the exploitation. (iii) Tap information resident or transient in the equipment/network. (b) The firm will be considered to be in breach of the procurement contract, in case physical damage, loss of information or infringements related to copyright and Intellectual Property Right (IPRs) are caused due to activation of any such malicious code in embedded software.</li> </ul>	





- Supplier shall ensure that the Invoice is raised in the name of Consignee with **GSTIN of Consignee only**.
- The buyer organization is an institution eligible for concessional rates of GST as notified by the Government of India. The goods for which bids have been invited fall under classification of GST concession and the conditions for eligibility of concession are met by the institution. A certificate to this effect will be issued by Buyer to the Seller after award of the Contract. Sellers are requested to submit their bids after accounting for the Concessional rate of GST.  
**Applicable Concessional rate of GST : 5%**  
**Notification No. and date : 45/2017 (CGST) KA.NI .- 2-1823/XI-9(47)/17 (SGST), 47/2017 (IGST) dated 14/11/2017**
- **Upload Manufacturer authorization:** Wherever Authorised Distributors are submitting the bid, Manufacturers Authorisation Form (MAF)/Certificate with OEM details such as name, designation, address, e-mail Id and Phone No. required to be furnished along with the bid.
- **Scope of supply** (Bid price to include all cost components) : Supply Installation Testing Commissioning of Goods and Training of operators and providing Statutory Clearances required (if any)
- **OEM Turn Over Criteria:** The minimum average annual financial turnover of the OEM of the offered product during the last three years, ending on 31st March of the previous financial year, should be as indicated in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the OEM is less than 3 year old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria. In case of bunch bids, the OEM of CATEGORY RELATED TO primary product having highest bid value should meet this criterion.
- **IMPORTED PRODUCTS:** In case of imported products, OEM or Authorized Seller of OEM should have a registered office in India to provide after sales service support in India. The certificate to this effect should be submitted.
- **Dedicated /toll Free Telephone No. for Service Support** BIDDER/OEM must have Dedicated/toll Free Telephone No. for Service Support.
- **Escalation Matrix For Service Support:** Bidder/OEM must provide Escalation Matrix of Telephone Numbers for Service Support.
- **ISO 9001:** The bidder must have ISO 9001 certification.
- Bidder's offer is liable to be rejected if they don't upload any of the certificates / documents sought in the
- **Warranty period** of the supplied products shall be as given in specifications from the date of final acceptance of goods or after completion of installation, commissioning & testing of at consignee location. OEM Warranty certificates must be submitted by Successful Bidder at the time of delivery of Goods. The seller should guarantee the rectification of goods in case of any break down during the guarantee period. Seller should have well established Installation,
- Commissioning, Training, Troubleshooting and Maintenance Service group in INDIA for attending the after sales service. **Details of Service Centres near consignee destinations** are to be uploaded along with the bid.



	<ul style="list-style-type: none"> <li><b>NET WORTH:</b> Net Worth of the OEM should be positive as per the last audited financial statement.</li> </ul>	
<b>4.6 Buyer Added ATC clauses</b>	<ol style="list-style-type: none"> <li>All bids must contain complete technical details of the product.</li> <li>The quotation must be valid till 31.03.2022.</li> <li><b>Quotations shall be in two parts:</b> <ol style="list-style-type: none"> <li><b>Part-I (Technical):</b> This should contain all the technical details cum specifications, general arrangement drawings and sample images of the products. Technical compliance of the above specification and makes should be clearly specified. It should contain unpriced bid along with terms and conditions, warranty, taxes etc. This should be submitted inside a sealed envelope and marked as "Technical Bid."</li> <li><b>Part-II (Financial):</b> The commercial bid of the above items, containing pricing along with commercial terms and conditions, should be submitted inside another sealed envelope and marked as "Financial Bid."</li> </ol> </li> <li>Delivery period must be within 15 days from purchase order date. In case of import, the duration will be 20 days.</li> <li>To be eligible for award of contract, Bidder / OEM must submit all the documents along with bid on/before the date of bid opening</li> <li>No Call Locking will be entertained (in/out stationed). If at all it is required, then it will be performed by local Maintenance Engineer.</li> <li>The onsite testing/installation of the product is mandatory.</li> <li>All applicable cables and connectors must be supplied.</li> <li>Response time should be within 8 working hours and major problem resolving time must not be more than 2 working days for the aforesaid product.</li> <li>Only original equipment manufacturer /Authorized channel partners having letter of support from OEM are eligible to bid.</li> <li>OEM must have a Functional Service Centre within 100 kms of IIT Kanpur.</li> <li>Bid clarifications (if any) must be received within 72 hours of D.O.P. by any bidder.</li> <li>Query clarification from buyer end must be replied within 48 hours failing which, offers are liable for rejection.</li> <li>Our payment terms and conditions are 90% after delivery and 10% after inspection and approval upon successful commissioning.</li> <li>The Institute/Technical Evaluation Committee reserves the right for accepting and rejecting any quotation(s) without assigning any reason thereof.</li> </ol>	
<b>5. Warranty</b>	Three Years Onsite warranty on each component	