



Indian Institute of Science (IISc), Bangalore - 560012
Physical Sciences and
Supercomputer Education and Research Centre (SERC)
IISc

Corrigendum and Response to Queries
with reference to

**Supply and Installation of a Design built Data Centre cooling system in
Physical Sciences and
Supercomputer Education and Research Centre (SERC)
Indian Institute of Science, Bangalore**

**Tender No.: [IISc/Purchase/SERC/2020/05](#)
Date: **June 8, 2020**
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CPPP Website for e-Tender Submission
<https://eprocure.gov.in/eprocure/ap>

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1. Corrigendum to the Tender

SNo	Reference	Corrigendum
1	<p>Page 3 2.1.4 Cooling</p> <p>Page 4 2.2.3 Cooling</p> <p>Page 6 3.1.3 Cooling</p> <p>Page 13 Item 4 in BoQ compliance sheet</p>	<p>Current specification: Precession Air Condition Server Room: Liquid Cooling</p> <p>Modification: The mention of “Liquid Cooling” may be considered as removed in these pages. In all cases, cooling should be DX based with air-cooled condensing unit.</p>
2	<p>Page 4 2.1.6 Fire Safety</p> <p>Page 4 2.2.5 Fire Safety</p> <p>Page 8 3.1.5 Safety and BMS features</p> <p>Page 15</p>	<p>Addendum: Makes for Fire Safety Systems: XTRALIS / CeaseFire</p>

	Item 6 in BoQ compliance sheet	
3	Page 4 2.2.1 Civil Works	<p>Current statement: 3) Ducting from the PAC room to the compute server room.</p> <p>Modified to: 3) Ducting from 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</p>
4	Page 6 3.1.1 Civil Works	<p>The following statement in item 7 of current specification: The bottom of the panel shall be of 0.05 mm Aluminum foil to create a fire and humidity barrier and this should provide floor's electrical continuity.</p> <p>Modified to: The bottom of the panel shall have a conducting metal layer to create a fire and humidity barrier and this should provide floor's electrical continuity.</p> <p>Rest of item 7 will stay unmodified.</p>
5	Page 6 3.1.2 Server racks Page 13, Item 3	<p>Current specification: Approved Makes: APC</p> <p>Modified to: Approved Makes: APC/Legrand/Vertiv/WQ India The racks must be compliant to the rack specification mentioned in the tender, particularly in terms of height, internal and external dimensions and server load requirements.</p>
6	Page 6 3.1.2 Server racks	<p>Current specification: 600mm W X 2000mm H X 1200mm D with Front and rear perforated sheet steel door. Racks with PDUs and Cable Managers. Each Rack must have 2 PDUs, each PDU must have 18 no's of C13 and 4 Nos of C19 Sockets. The racks supplied should be equipped with blanking panels to where servers are not installed to prevent mixing of hot and cold air.</p> <p>Modification: 600mm W X 2000mm H X 1200mm D with Front and rear perforated sheet steel door. Racks with PDUs and Cable Managers. Each Rack must have 2 PDUs, each PDU must have 18 no's of C13 and 4 Nos of C19 Sockets. Cable managers: 1U Closed</p>

		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.
7	Page 6 3.1.3 Cooling	Current specification: Approved Makes : Flaktgroup / Emerson / APC / Rittal / Schnieder / Liebert / Stulz / Trane Modification: Approved Makes : Flaktgroup / Emerson / APC / Rittal / Schnieder / Liebert / Stulz / Bluebox
8	Page 6 3.1.3 Cooling	Current specification: 3) All refrigerant lines up to the condensing unit should be insulated and aluminium cladded. Modification: 3) All refrigerant lines up to the condensing unit should be insulated. All insulation exposed to ambient should be UV compliant insulation and weather resistant.
9	Page 6 3.1.3 Cooling	Current specification: 5) The A-Frame HEX in the PAC 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. Modification: 5) The A-Frame / slanted coil HEX in the PAC 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. However, the solution should fit within the specified space earmarked for the PAC unit.
10	Page 7 3.1.3 Cooling	Current specification: 9) The PLC in the PAC should be fully equipped to log all data pertaining to the operation of the PAC unit such as power consumption, 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. Modification: 9) 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

		<p>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.</p>
11	<p>Page 7 3.1.3 Cooling</p>	<p>Current specification: 13) 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.</p> <p>Modification: 13) 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 acceptable. But should also be programmed by the user manually.</p>
12	<p>Page 7 3.1.3 Cooling</p>	<p>Current specification: 14) Units should operate in DX Mode. Coefficient of performance (COP) should be greater than 3, and Energy Efficient Ratio (EER) should be greater than 10.5</p> <p>Modification: 14) Units should operate in DX Mode. Coefficient of performance (COP) should be greater than 3, and Energy Efficient Ratio (EER) should be greater than 10.5. COP can be at AHRI condition.</p>
13	<p>Page 7 3.1.3 Cooling</p>	<p>Current specification: 18) Direct expansion air-cooled Precision AC units version A with internal compressor(s) matched with external air-cooled condenser. Each unit must have double circuit with two compressors in each circuit.</p> <p>Modification: 18) Direct expansion air-cooled Precision AC units version A with internal compressor(s) matched with external air-cooled condenser. Each unit must have single / multiple circuit with suitable number of compressors in each circuit.</p>
14	<p>Page 7 3.1.3 Cooling</p>	<p>Current specification: 19) Invertor Scroll Compressor, R410A GAS , Frontal Throw / Top with EC Fans, EEV with back time.</p> <p>Modification: 19) Invertor / Digital Scroll Compressor, R410A GAS, Frontal Throw / Top with low-noise EC Fans, EEV. Units should be with bottom discharge since the room in SERC has raised floor. Radial discharge fans mounted in the Raised Floor would be preferred.</p>

15	<p>Page 7 3.1.3 Cooling</p> <p>Page 14 Item 4 in BoQ Compliance Sheet</p>	<p>Current specification: 21) PAC units should be QMS Certified .9001/14001/18001 , CE Certified and AHRI certified Heat exchanger.</p> <p>Modification: 21) PAC units should be QMS Certified 9001/14001/18001. Heat exchangers should preferably be certified by appropriate agency – ASME/AHRI/CE/RU.</p>
16	<p>Page 7 3.1.3 Cooling</p>	<p>Current specification: 23) The Outdoor Condenser unit shall comprise of Condenser EC fans & motor, Condenser cooling coil.</p> <p>Modification: 23) The Outdoor Condenser unit shall comprise of Condenser EC fans & motor, Condenser cooling coil. DC fans with fan-speed controllers are also acceptable.</p>
17	<p>Page 8 3.1.5 Safety and BMS features</p> <p>Page 15 Item 6 in BoQ Compliance Sheet</p>	<p>Current specification: 4) One IP based camera for remote monitoring.</p> <p>Modification: 4) One IP based PTZ camera for remote monitoring.</p>
18	<p>Page 9 3.1.7 SERC Data Center Layout</p>	<p>Addendum:</p> <p>PAC Room:</p> <ul style="list-style-type: none"> • Height from floor to ceiling = 16 feet 1 inch <p>Computer Server Room:</p> <ul style="list-style-type: none"> • 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 <p>The above two rooms are separated by a soft-board partition.</p> <p>Power panels: SERC will provide the power panels. Following are the specifications of the power panels.</p>

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.

19	Page 13 Item 3, Server Racks (Physics Location)	<p>Current specification: Physics - Server Racks: Qty 10 Nos Approved Makes : APC 600W X 2000H X 1200D with Front and rear perforated sheet steel door Racks with PDUs and Cable Managers Each Rack must have 2 PDUs, each PDU must have 18 no's of C13 and 4 Nos of C19 Sockets</p> <p>Modification: Physics - Server Racks: Qty 10 Nos Approved Makes : APC/Legrand/Vertiv/WQ India</p> <p>600mm W X 2000mm H X 1200mm D with Front and rear perforated sheet steel door. Racks with PDUs and Cable Managers. Each Rack must have 2 PDUs, each PDU must have 18 no's of C13 and 4 Nos of C19 Sockets. Cable managers: 1U 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 qty of 1U blanking panels.</p>
20	Page 13 Item 4, Cooling (Physics location)	<p>Current specification: Approved Makes : Flaktgroup / Emerson / APC / Rittal / Schnieder / Liebert / Stulz</p> <p>Modification: Approved Makes : Flaktgroup / Emerson / APC / Rittal / Schnieder / Liebert / Stulz / Bluebox</p>
21	Page 14 Item 5, UPS (Physics Location)	<p>Current specification: Physics - Modular UPS System: Approved Makes : APC / Delta / Emerson / Schnieder / Legrand / Liebert / Numeric</p> <p>Modification: Physics - Modular UPS System: Approved Makes : APC / Delta / Emerson / Schnieder / Legrand / Liebert / Numeric/ FUJI ELECTRIC CONSUL NEOWATT</p>

2. Response to Queries

SNo	Reference	Query	Response
1	Page 3 2 Schedule of Requirements	Whether tender is for two locations or for one locations - Physics & SERC.	Tender is for two locations, Physics and SERC, in IISc
2	Page 3 2 Schedule of Requirements	Site Visit to be arranged to understand the existing site visit constraints	Potential bidders are encouraged to contact the Physics and SERC department offices, set up appointments and make the site visits.
3	Page 3 2 Schedule of Requirements	Physics: The first proposed Data centre cooling system infrastructure will be housed in the Ground floor of the existing New Physical Sciences extension building. Details regarding the existing support infrastructure are given in Annexure 1. Detailed Specifications Unavailable	Refer SL.NO 1 to 6 in Pages 13,14 and 15 of the tender.
4	Page 3 2.1.1 Civil Works Page 13 Item 1 in BoQ compliance sheet	Plz provides us the details of material to be used. False ceiling and window closing: Must be all metal and Fire resistant	Aluminium diffusers/grills with fire resistant blanking tiles. Minimum of 2 ft x 2 ft mounted on aluminium structure.
5	Page 3 2.1.1 Civil Works	Only False Ceiling is been asked , but Raised Floor is not asked - Request you to please confirm/Clarify	Physics location: Only False Ceiling required. Raised floor is NOT required
6	Page 3 2.1.2 Electrical Works	Electrical works: Request you to please share the Electrical Single Line Diagram (SLD)	Physics location: please refer page 20, Annexure-I
7	Page 3 2.1.4 Cooling Page 4 2.2.3 Cooling Page 6 3.1.3 Cooling	Kindly clarify whether CW based or DX based cooling to be considered Point No 14 & 18 ask unit to operated in DX Mode .	Refer to SNo 1 in the corrigendum table above in this document.

	Page 13 Item 4 in BoQ compliance sheet		
8	Page 3 2.1.4 Cooling Page 6 3.1.3 Cooling Containment Page 13 Item 4 in BoQ compliance sheet	Request you to please change as : Hot/Cold Aisle containment CRCA Fabricated at least 2mm thickness. Bidder/OEM should be allowed quote for the best suited solution as per their design	The tender specifications will stay unmodified.
9	Page 3 2.1.4 Cooling Page 4 2.2.3 Cooling Page 6 3.1.3 Cooling Page 13 Item 4 in BoQ compliance sheet	The tender mentions DX type PAC units with inverter scroll compressor, it be is Air cooled system. Can you pl advice on the requirement of liquid cooling mentioned in tender as it is not clear	Refer to SNo 1 in the corrigendum table above in this document.
10	Page 3 2.1.4 Cooling Page 4 2.2.3 Cooling Page 6 3.1.3 Cooling	In most of the parts of the Tender RFP document It is mentioned as Liquid cooling type of PAC and in Specification it is mentioned DX type PAC - Request you to please clarify	Refer to SNo 1 in the corrigendum table above in this document.

	Page 13 Item 4 in BoQ compliance sheet		
11	Page 3 2.1.4 Cooling Page 13 Item 4 in BoQ compliance sheet	Max. Cooling capacity 50 KW Plz confirm the operating temperatures	20 degree Celsius supply with 28 degree Celsius return temperature
12	Page 3 2.1.4 Cooling Page 13 Item 4 in BoQ compliance sheet	Whether the PAC should be chilled water or Refrigerant based(Dx)	Refrigerant based(Dx)
13	Page 3 2.1.4 Cooling	Max Cooling output 50KW - Request you to please clarify that 50KW is per Machine or $N(kw) + N(kw) = 50KW$	50 KW per PAC (15 TR).
14	Page 4 2.1.5 UPS System Page 14 Item 5 in BoQ compliance sheet	Request you to please change as : Minimum 120 KVA capable modular UPS Frame with following. a. minimum 20 KVA x 3 modules 40 VA output load. One module for redundancy. 120 kVA UPS frame is OEM specific . Different OEM have their own frame size as per their design	Accepted only if N+1 redundancy is met @ full 40KVA load. If one module fails, The UPS must sustain the full load of 40KVA at any given time.
15	Page 4 2.1.5 UPS System Page 13 Item 5 in BoQ compliance sheet	Kindly confirm if we can offer 40 KVA x 2 modules in 80 KVA UPS Frame. One 40 KVA Module redundant Battery backup considered at 0.8PF, ECV:1.7 V/cell kindly confirm	Minimum 120KVA Frame required with minimum 20KVA x 3 Modules. 15 Minutes Backup @ full load of 40 KVA @ 0.8PF

16	Page No.4 2.1.5 UPS System	Request you to please accept or Amend as 120KVA or higher Modular UPS frame consisting 20KVA or higher Module	Accepted only if N+1 redundancy is met @ full 40KVA load. If one module fails, The UPS must sustain the full load of 40KVA at any given time.
17	Page 4 2.1.6 Fire Safety Page 4 2.2.5 Fire Safety Page 8 3.1.5 Safety and BMS features Page 15 Item 6 in BoQ compliance sheet	BMS System for monitoring of the Data center operation and controlling is not Asked in the Tender - Request you to please confirm whether there is any Existing BMS system. We suggest to incorporate and include BMS System for monitoring.	BMS system is not in the scope of the tender. Fire suppression is only for the concerned rooms.
18	Page 4 2.1.6 Fire Safety Page 4 2.2.5 Fire Safety Page 8 3.1.5 Safety and BMS features Page 15 Item 6 in BoQ compliance sheet	Request you to please share the detailed Technical Specifications of the Fire Safety Systems	The fire safety system is specific to the vendor solution.
19	Page 4 2.2.1 Civil Works	Only Raised Flooring is asked , False Ceiling is not asked - It is inform you that Ducting for the PAC is being asked, so naked ducting will be seen on the ceiling in case no Ceiling - Please Clarify	Refer to SNo 3 in the corrigendum table above in this document.

20	Page 4 2.2.3 Cooling	Whether we need to consider 21 TR X 3 Nos (2W+1S) to comply N+1 requirement. Plz confirm.	21 TR X 3 Nos (2W+1S) is the “minimum” requirement.
21	Page 4 2.2.4 Electrical	SLD to be provided	Refer to SNo 18 in the corrigendum table above in this document.
22	Pages 4 and 5 2.2.6 Buyback of existing PACs and AHU	Plz provide the capacities	Capabilities already provided in the tender in Page 8, Section 3.1.6
23	Page 6 3.1.1 Civil Works Item 7	Cementitious tiles does not have aluminium foil at bottom. Plz clarify	Refer to SNo 4 in the corrigendum table above in this document.
24	Page 6 3.1.2 Server racks Quantity	For 6 racks cooling unit capacity is Higher compare to 10 Nos cooling capacity for physics, Plz confirm. Also provide us the each rack capacity (KW) to select the proper supply air grilles	Clarifications on the total number of racks and the racks to be supplied by the bidder already provided in the tender in Page 7, item 15 of Section 3.1.3. Each rack capacity (KW) can be obtained by converting 42 TR to KW and dividing by 10.
25	Page 6 3.1.2 Server racks Makes Page 13, Item 3 in BoQ compliance sheet	Letter for Approval of WQ INDIA make Network/Server Rack, Cold Aisle & Hot Aisle Containment and PDU. ... Further we would like to approve our product i.e. 42U Rack, Cold Aisle & Hot Aisle Con-tainment for this Tender ID: 2020_IISC_563602_1 and also for your future projects.	Server racks: Refer to SNo 5 in the corrigendum table above in this document. Hot aisle and cold aisle containment and PDUs: The tender specifications will stay unmodified.
26	Page 6 3.1.2 Server racks Makes Page 13, Item 3 in BoQ compliance sheet	Request you to please add in approved makes : APC / Vertiv Participation of more OEM and Bidders will bring competitiveness to deliver more economy to the customer.	Refer to SNo 5 in the corrigendum table above in this document.
27	Page 6 3.1.2 Server racks Blanking panels	Confirm the number of blanking panels per rack.	Refer to SNo 6 in the corrigendum table above in this document.

28	Page 6 3.1.2 Server racks Cable managers	Confirm the type and number of cable managers required.	Refer to SNo 6 in the corrigendum table above in this document.
29	Page 6 3.1.3 Cooling Makes	We request you to pl approve M/s. Bluebox brand in the approved make list. We are one of the prominent manufacturer of precision air conditioner having factory at Navi-Mumbai India. we have done many projects for the HPC server, pl let us know if any additional details are required from our end. Few manufacturer mentioned are under same group like (Emerson/Liebert), (APC/Schneider). Also the manufacturer like Trane are into manufacturing of chillers	Refer to SNo 7 in the corrigendum table above in this document.
30	Page 6 3.1.3 Cooling Makes	Request you to please add or consider Swegon Bluebox as one of the Approved Make	Refer to SNo 7 in the corrigendum table above in this document.
31	Page 6 3.1.3 Cooling Number of units	It is better if you can provide the inside room conditions and ambient temperature for selecting the PAC. Else every manufacturer will select the machine based on his assumption/consideration and will be difficult to evaluate. This being a containment project the return will be higher so pl advice on the conditions to be considered	The tender specifications will stay unmodified.
32	Page 6 3.1.3 Cooling Item 2	Request you to please amend as below : NVH level should be less than 70 DB (air noise) at 1 m from the PAC at rated speed corresponding to 50 Hz operation.	The tender specifications will stay unmodified.
33	Page 6 3.1.3 Cooling Item 3	Request you to please amend as : All refrigerant lines up to the condensing unit should be insulated with suitable thickness Nitrile Rubber insulation Tubes Suitable thickness Nitrile Rubber insulation Tubes are used for copper pipe insulation . Further , please suggest if piping is exposed to sun?	Refer to SNo 8 in the corrigendum table above in this document. Condensing unit exposed to sun.

34	Page 6 3.1.3 Cooling Item 3	The refrigerant piping is not aluminium clad. Cladding is done for chilled water piping as the pipe sizes are small it will be very difficult/not possible to do the same. Request you to pl delete the cladding or else suggest alternate option for the same	Refer to SNo 8 in the corrigendum table above in this document.
35	Page 6 3.1.3 Cooling Item 5	Request you to please change as : The A-Frame / slanted coil HEX in the PAC 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. A Frame HEX is OEM specific ,Slant Coil reduced internal pressure & reduced power consumption	Refer to SNo 9 in the corrigendum table above in this document.
36	Page 6 3.1.3 Cooling Item 5	The frame and heatexchaner will be as per OEM design and the shape can vary. Also there will be condensate drip tray in the PAC machine to drain the condensate outside the DC room	Refer to SNo 9 in the corrigendum table above in this document.
37	Page 7 3.1.3 Cooling Item 6	Request you to please amend as : The PAC should deliver a minimum of 350- 550 CFM /TR of air at operating speed with modulation. The air flow rates are calculated based on the pressure drop the vendor would provide with proposed cooling solution. The air flows should be measured with a flow grid or a flow hood at the time of commissioning. The CFM/ TR asked for the unit is very high i.e. 850 CFM / ton	The tender specifications will stay unmodified.
38	Page 7 3.1.3 Cooling Item 6	Pl advice on the ESP to be considered for the machine selection and for the required airflow. The Air flow requirement can vary from manufacturer to manufacturer but the capacity will be provided based on the requirement in tender. As the capacity of the machine will be also dependent on the rows of coil.	The tender specifications will stay unmodified.
39	Page 7 3.1.3 Cooling	Hot aisle door is not going to open during the event of the power failure for PAC solution. Plz confirm.	The tender specifications will stay unmodified.

	Item 7		
40	Page 7 3.1.3 Cooling Item 7	There cannot be communication of PAC microprocessor and the hot aisle containment. Request you to pl advice on the log of operation and controlling feature. Also this being a hot aisle containment it is better if the doors are closed in case of any issue as if the doors are opened the hot air will get mixed in the room and this will increase the room temperature and create problem.	The tender specifications will stay unmodified.
41	Page 7 3.1.3 Cooling Item 8	The hot aisle containment cannot be wired with PAC. Pl advice if the cold aisle containment is being considered instead of hot aisle containment	The tender specifications will stay unmodified.
42	Page 7 3.1.3 Cooling Item 9	Request you to please amend as : 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. Power consumption of the unit or the cooling solution can be monitored through a digital energy meter at power input level . Same may be integrated with monitoring soluton or BMS .	Refer to SNo 10 in the corrigendum table above in this document.
43	Page 7 3.1.3 Cooling Item 9	Power consumption of the PAC units should be measured at the incomming panel.PAC power details is not available in PAC PLC. Plz confirm.	Refer to SNo 10 in the corrigendum table above in this document.
44	Page 7 3.1.3 Cooling Item 9	The remote monitoring can be thru BMS card of SNMP/Modbus/Bacnet type request you to pl accept same as per required card	The tender specifications will stay unmodified.
45	Page 7 3.1.3 Cooling Item 13	The program will be as per OEM design and not user defined.	Refer to SNo 11 in the corrigendum table above in this document.
46	Page 7 3.1.3 Cooling	The COP will be at AHRI condition pl advice.	Refer to SNo 12 in the corrigendum table above in this document.

	Item 14		
47	Page 7 3.1.3 Cooling Item 15	Request you to please confirm the Make of the racks to be provided by the Department or from your end	1 No. Netrack 3 Nos. APW racks of the same dimensions as given in Page 7, 3.13, item 15.
48	Page 7 3.1.3 Cooling Item 18	Request you to please amend as : Direct expansion air-cooled Precision AC units with internal compressor(s) matched with external air-cooled condenser. Each unit must have single / multiple circuit with suitable number of compressors in each circuit. The number of circuit & number of compressor per circuit may differ as per OEM design.	Refer to SNo 13 in the corrigendum table above in this document.
49	Page 7 3.1.3 Cooling Item 18	PAC units are with 2 Nos compressors with 2 Nos separate circuits.Plz confirm	Refer to SNo 13 in the corrigendum table above in this document.
50	Page 7 3.1.3 Cooling Item 19	Request you to please change as : Invertor / Digital Scroll Compressor, R410A GAS , Frontal Throw / Top with EC Fans, EEV . Further , request you to kindly clarify the "back time" mentioned in the specification . Inverter scroll compressor is specific to some OEMS .	Refer to SNo 14 in the corrigendum table above in this document.
51	Page 7 3.1.3 Cooling Item 19	Can we propose units with multiple Scroll compressors. Plz confirm.	Yes. Units with multiple scroll compressors may be provided.
52	Page 7 3.1.3 Cooling Item 19	Plz confirm whether units should be with bottom discharge or front discharge.	Refer to SNo 14 in the corrigendum table above in this document. Units should be with bottom discharge.
53	Page 7 3.1.3 Cooling Item 19	The machine is provided with liquid line solenoid valve is provided with machine so it closes when the machine/compressor goes OFF thus protecting the system. Considering same EEV back up is not required and cannot be provided.	The tender specifications will stay unmodified.

54	Page 7 3.1.3 Cooling Item 21	PAC units are manufactured at ISO certified manufacturing facility. CE & AHRI certification is not available. Plz confirm	Refer to SNo 15 in the corrigendum table above in this document.
55	Page 7 3.1.3 Cooling Item 21	The factory can be ISO certified but Precision AC cannot be QMS certified, CE certified and AHRI certified. The condenser coil are as per the site ambient conditions an indoor to outdoor distance so the heat exchanger cannot be AHRI certified. Request for your to pl check and advice	Refer to SNo 15 in the corrigendum table above in this document.
56	Page 7 3.1.3 Cooling Item 23	Request to please amend as : The Outdoor Condenser unit shall comprise of Condenser EC/AC fans & motor, Condenser cooling coil.	Refer to SNo 16 in the corrigendum table above in this document. Only EC or DC fans acceptable.
57	Page 7 3.1.3 Cooling Item 23	Can we propose condenser units with direct driven axial fans with fan speed controller to control the fan speed.	Refer to SNo 16 in the corrigendum table above in this document.
58	Page 7 3.1.3 Cooling Item 23	We request you pl consider AC axial fan with fan speed controller. The cost of EC fans are very high but the considerable saving are not high compared to axial AC fans with fan speed controller	Refer to SNo 16 in the corrigendum table above in this document. Only EC or DC fans acceptable.
59	Page 8 3.1.4 Electrical	Request you to please share the Electrical SLD if any for the complete work along with the details of Existing Power Panel and its Breaker ratings	Refer to SNo 18 in the corrigendum table above in this document.
60	Page 8 3.1.5 Safety and BMS features Item 4	Request you to please confirm that is there existing NVR or NVR to be considered by the bidder	NVR is to be considered by the bidder.
61	Page 9 3.1.7 Data layout	As per description SERC data center Racks are 6 nos but as per drawing it shows 10 racks. Also overall length of the row is shown more as per tile size. Plz clarify,	Clarifications on the total number of racks and the racks to be supplied by the bidder already provided in the tender in Page 7, item 15 of Section 3.1.3.
62	Page 11 Section 5 EMD Item 5	We are the MSME registered bidder under the category of D Category , We are in the business of System Integration - Request you to please confirm that whether we are allowed/Exempted in payment of EMD	The statement in the tender is self-explanatory.

63	Page 13 Item 3 in BoQ compliance sheet	Request you to please accept or Consider WQ/Legrand/Vertiv as the Approved makes for the Racks	APC/Legrand/Vertiv/WQ accepted
64	Page 13 Item 4 in BoQ compliance sheet	Hot Aisle Containment: 1. Confirm the containment door if it is sliding door or swing door. 2. final layout to be provided. 3. Vertical height details to be provided	1) Sliding/swing door both are acceptable. 2) Refer Annexure-I, Page 20 3) Vertical Height based on rack height.
65	Page 14 Item 5 in BoQ compliance sheet UPS Makes	We write on behalf of Fuji Electric Consul Neowatt; this is a letter to add our name (FUJI ELECTRIC CONSUL NEOWATT) in the list of UPS suppliers in tender as it is not able to allow us to participate into your valuable & prestigious project of Datacenter of IISc	Refer to SNo 21 in the corrigendum table above in this document.
66	Page 14 Item 5 in BoQ compliance sheet UPS	UPS with 120 KVA Base frame and installed with 3 Modules of 20 KVA Scalable up to 120 KVA A base frame height of 150 mm considered for 80 KVA UPS kindly confirm	Minimum 120KVA base Frame required with minimum 20KVA x 3 Modules. N+1 redundancy @ full 40KVA load. 80KVA base frame NOT considered.
67	Page 15 Item 6 in BoQ compliance sheet	Biometric access and manual override switch asking for datacenter main entry. Specification is missing.	Automatics Sliding metal door, dimensions height 7 ft x width 5 ft, with Biometric access control and access type Digital Keypad, Mechanical Key, Face and Fingerprint. Must also automatically open when the power to PACs trips
68	General Approved Makes	It is understood that Wherever Approved make is not Mentioned, bidder is free to select Any of the brand /Make - Request you to please confirm	The tender had not specified the makes for the fire system. The makes are now specified in SNo 2 in the corrigendum table above.
69	Predefined BoQ	In the BOQ Sheet provided along with the Tender, Item No.17, Buyback of existing Equipments - The prices Quoted against this items has to be get Minus from the Total, but is adding to the other items - Please check and confirm	The BoQ sheet will be corrected and uploaded as the BoQ corrigendum.