	BHARAT HEAVY ELECTRICAL LIMITED		Enquiry No. :		
	UNIT'S ADDRESS:		Due Date :		
	CONTACT PERSON'S NAME/DESIGN./PHONE NO./		Supplier Qtn No.:		
	E-MAIL (FROM PURCHASE DEPT.)		Date :		
SPECIFICATION OF HVAC SYSTEM FOR ROTOR WINDING HALL IN EM SHOP					
NOTE:-					
1. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Bidder and submitted along with the offer. Inadequate / incomplete, ambiguous or unsustainable information against any of the clause of the specifications/ requirements shall be treated as non-compliance.					
2. The offer and all documents enclosed with offer should be in English language only.					
3. Bidder must submit complete information against clause no.16 of this document. The offer meeting this clause would only be considered.					
4. This tender schedule must be submitted along with the General Conditions, Special conditions etc. enclosed herewith duly signed and stamped on each page with bidder's covering letter. Quotations should be filled in our tender schedules only. Any deviations need to be filled under 'Deviations' column and if required can attach separate sheet on bidder's letter pad and enclosed to the tender documents. The contractor shall fill remarks as 'Confirmed or Not confirmed' under 'Offered' column for all items and specify if any as per BHEL requirement.					
NAME & ADDRESS OF THE SUPPLIER :			NAME & ADDRESS OF THE INDIAN AGENT :		
TELEPHONE NOS.:			TELEPHONE NOS.:		
FAX NOS.:			FAX NOS.:		
E-MAIL ADDRESS :			E-MAIL ADDRESS :		
Sl.No.	Description for BHEL Requirement Specification No. S-EMT-232/00 dated 18/01/2013	BHEL Requirement	Offered	Deviations	Remarks
	SCOPE :				
1	Design, supply, Erection and Commissioning of HVAC (Heating, Ventilation and Air Conditioning) system for Rotor Winding Hall of dimensions 24.0 metres x 30.0 metres with a false ceiling height of 9.0 metres, to maintain a temperature of 25 deg C \pm 2 deg C with a relative humidity of \leq 60 %. Supply of all the materials required for the above is in the scope of	Vendor to Confirm			
2	Air conditioning type: Indirect cooling system	Vendor to Confirm			
3	Type of cooling : Condenser type air cooling	Vendor to Confirm			
4	Total TR requirement : 100 TR \pm 5. The minimum number of units shall be four or more as required to maintain uniform temperature in the hall.	Vendor to Confirm and specify			
5	Pumps : Monoblock centrifugal type chilled water circulation pumps with mechanical seal and drive motor as required and with one standby	Vendor to Confirm and specify			
6	Refrigerant should be : R134a/R404a/NON CFC only	Vendor to Confirm and specify			

Sl.No.	Description for BHEL Requirement Specification No. S-EMT-232/00 dated 18/01/2013	BHEL Requirement	Offered	Deviations	Remarks
7	AHU				
7.1	Type of AHU : Double skin horizontal air handling unit of 10000 CFM or more	Vendor to Confirm and specify			
7.2	No of AHUs : Minimum 4 Nos.	Vendor to Confirm and specify			
7.3	Mounting of AHUs : Roof mounting or Other arrangement. Mounting location of the AHUs to be given by the vendor and approval has to be taken before commencement of work.	Vendor to Confirm and specify			
7.4	Dimensions of each AHU	Vendor to specify details			
7.5	Weight of each AHU	Vendor to specify details			
7.6	De-humidification system	Vendor to specify the required heaters qty offered as per his design and arrangement			
8	PIPING				
8.1	Piping - 1 : MS 'C' class piping for chilled water circulation duly insulated with minimum 50 mm thick TF expanded polystyrene pipe sections with sand cement plastering. (Note: the chiller unit to be installed 100 mts away from the hall. Refer Drg no. 4-EMT-1802 /00 in Annexure-1 for layout)	Vendor to Confirm			
8.2	Pipes diameter and length : Approximate sizes: 125mm Dia--300Rmt; Header pipe 100mm--60Rmt; 75mm--170 Rmt; 50mm--20Rmt. For exact details, it is suggested Vendor to visit / study the site and the area of application and give exact diameter and length of pipes. Vendor to specify if different pipe sizes are required. (Note: the chiller unit to be installed 100 mts away from the hall. Refer Drg no. 4-EMT-1802 /00 Annexure-1 for layout)	Vendor to specify the diemensions of different pipes and length of each pipe.			
8.3	Piping - 2 : MS 'B' class piping for drain line duly insulated with minimum 50 mm thick TF expanded polystyrene pipe section with sand cement plastering	Vendor to Confirm			
8.4	Pipes diameter and length : Vendor to visit / study the site and the area of application and give the diameter and length of pipes.	Vendor to specify the diemensions of different pipes and length each pipe.			
9	VALVES				
9.1	Butterfly valves / Ball valves of PN 16 for chilled water pipe line (one number Extra)	Vendor to specify the dia and number of valves offered			
9.2	Balancing valves for chilled water pipe line (one number Extra)	Vendor to specify the dia and number of valves offered			
9.3	Non - return valves for chilled water pipe line (one number Extra)	Vendor to specify the dia and number of valves offered			
9.4	Y - Strainers (one number Extra)	Vendor to specify the dia and number of strainers offered			

Sl.No.	Description for BHEL Requirement Specification No. S-EMT-232/00 dated 18/01/2013	BHEL Requirement	Offered	Deviations	Remarks
10	THREE WAY MODULATING VALES				
10.1	Three way modulating valves (one number Extra)	Vendor to specify the dia and number of valves offered			
10.2	Rubber expansion joints for modulating valves (one number Extra)	Vendor to specify the dia and length of the rubber expansion joints offered			
10.3	Electrical control system for modulating valves (Modulating motor, actuator, transformer and control wiring to be done by the vendor)	Vendor to confirm			
11	DUCTING				
11.1	24 guage spiral ducting	Vendor to specify the size of ducting offered. Vendor should also provide the drawing for ducting arrangement			
11.2	22 guage spiral ducting	Vendor to specify the size of ducting offered. Vendor should also provide the drawing for ducting arrangement			
11.3	Accoustic insulation	Minimum 25 mm thick board of density 48 Kg / Cu.mtr or more.			
11.4	Thermal insulation	Minimum 25 mm thick Aluminium faced glass wool of density 24 Kg / Cu.mtr or more			
11.5	Grills	Aluminium powder coated grills of required dimension. Vendor to specify the offered size and length			
12	DIFFUSERS				
12.1	Diffusers - 1 : Aluminium powder coated diffusers with dampers.	Vendor to specify the offered size and length			
12.2	Diffusers - 2 : Aluminium powder coated diffusers without dampers.	Vendor to specify the offered size and length			
12.3	G.I volume control damper	Vendor to specify the offered size and length			
12.4	G.I Fire control damper	Vendor to specify the offered size and length			

Sl.No.	Description for BHEL Requirement Specification No. S-EMT-232/00 dated 18/01/2013	BHEL Requirement	Offered	Deviations	Remarks
13	MISCELLANEOUS ITEMS				
13.1	Pressure indicators (one number Extra)	Vendor to specify the type of guages and quantity .			
13.2	Number of pressure indicators	Vendor to specify the required qty offered as per his design			
13.3	Industrial thermometres	Vendor to specify the required qty offered as per his design			
13.4	Water Flow switches for chillers (one number Extra)	Vendor to specify the required qty offered as per his design			
13.5	Supply of Expansion tank for chilled water , Capacity - 1000 litres and Make: Syntex	Vendor to Confirm			
13.6	Automatic air vent	Vendor to confirm the required qty offered as per his design			
13.7	Placement of chilling units : The units are to be placed at a minimum distance of 100 metres from the hall. Before quoting for the tender, the vendor may visit the site and offer accordingly.	Vendor to Confirm			
13.8	Electrical control station : The control station should be placed near the chiller units. On/ Off switch to be provided in the hall	Vendor to Confirm			
13.9	Remote operation of the AC unit	Vendor to Confirm			

Sl.No.	Description for BHEL Requirement Specification No. S-EMT-232/00 dated 18/01/2013	BHEL Requirement	Offered	Deviations	Remarks
13.10	In coming AC supply will be provided by BHEL to main electrical control station. Vendor to specify the details of the input supply rating and size of cable required. All other cables are in the scope of the vendor only.	Vendor to Confirm and Specify.			
13.11	Vendor to consider Lighting load, Electrical load, Brazing load, Mass of rotors kept inside hall and others as shown in Layout shown in Annexure-1, while designing the AC system and during erection and commissioning	Vendor to Confirm			
14	Erection and Commissioning :				
14.1	Supplier to take full responsibility for carrying out the erection & commissioning of the equipment. Service requirement like power, air & water shall be provided by BHEL at only one point to be indicated by supplier in their foundation/layout drawings. Other requirements like crane and helping personnel shall also be provided by BHEL. Details of these requirements should be informed by vendor in advance.	Vendor to Confirm			
14.2	Successful proving of the equipment by the supplier shall be considered as part of commissioning	Vendor to Confirm			
14.3	Tools, Tackles, instruments and other necessary equipment required to carry out all above activities should be brought by the supplier.	Vendor to Confirm			
14.4	Commissioning Spares required for commissioning of the equipment within stipulated time, shall be brought by the supplier on returnable basis.	Vendor to Confirm			
14.5	Portion, if any, of the equipment, accessories and other supplied items where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to Confirm			
15	PROVE OUT				
15.1	The vendor has to prove the HVAC System meeting the requirements specified at sl.no.1 of this specification under no heat load condition, but with dead weight of rotors and associated fixtures inside 'Rotor winding Hall'.	Vendor to Confirm			

Sl.No.	Description for BHEL Requirement Specification No. S-EMT-232/00 dated 18/01/2013	BHEL Requirement	Offered	Deviations	Remarks
16	QUALIFYING CONDITIONS				
16.1	The vendor should be original equipment manufacturer (OEM) or Authorised dealer of OEM or Authorised Consultant. In case of Authorised Dealer, a copy of certificate from OEM supplier (stating authorised dealership) to be submitted. In case of Authorised Consultant, he should have experience in supplying similar equipment of similar capacity, during last 5 years and should have installed atleast one installation. Performance certificate/s, from the end user need to be submitted stating equipment supplied should be working satisfactory for more than one year. Offers of those vendors will be considered who have supplied HVAC systems of minimum 50TR in the last five years having the individual AHU capacity of 10,000 CFM or more.	Vendor to confirm and Provide details			
16.2	The equipment being supplied should be brand new and reputed brands like Carrier, Voltas, Bluestar, Copland, Hitachi, Reynolds, Snowcool, Daikin and Siemens.	Vendor to Confirm and specify brand			
16.3	The system he has supplied shall be presently working satisfactorily for atleast one year after commissioning (on the date of opening of tender) should quote Supporting documents like copy of purchase order, performance certificate from the customer is to be submitted along with the offer. The information for the following are to be furnished by the vendor.	Vendor to confirm and Provide details			
16.4	Name of the company/customer where HVAC systems meeting the above requirements are supplied and installed. Complete postal address, phone No & Fax no, email of the company/Customer. Month and year of Commissioning. Name and designation of the contact person with phone number/email.	Vendor to Provide			
16.5	Delivery : 6 months from the date of issue of PO	Vendor to Confirm			

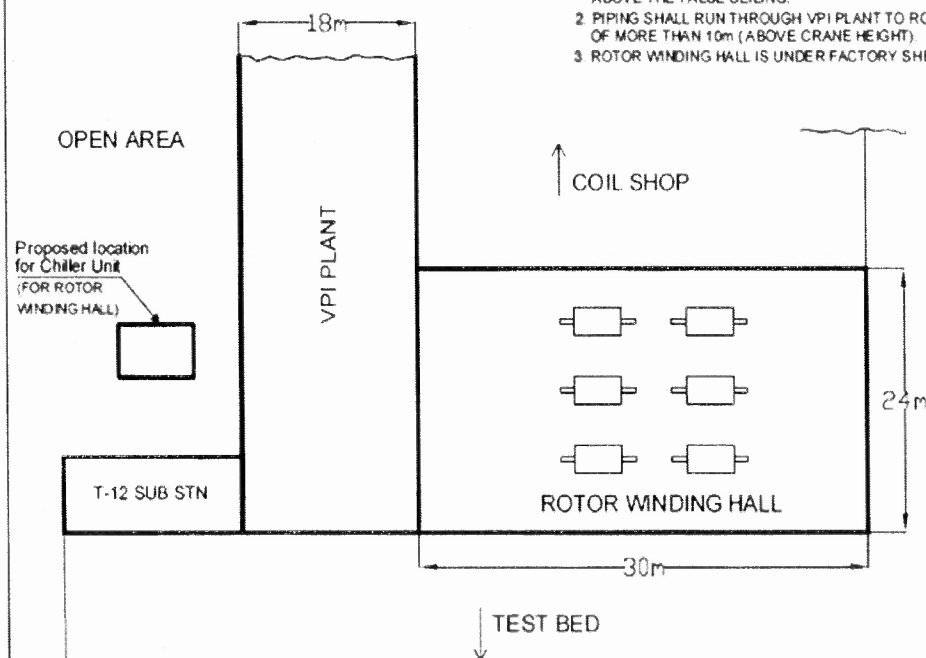
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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

Annexure-I AIR-CONDITIONING SYSTEM FOR ROTOR WINDING HALL



NOTE:

1. FALSE CEILING HEIGHT FOR ROTOR WINDING IS 9m AND PIPING SHALL RUN ABOVE THE FALSE CEILING.
2. PIPING SHALL RUN THROUGH VPI PLANT TO ROTOR WINDING HALL AT HEIGHT OF MORE THAN 10m (ABOVE CRANE HEIGHT).
3. ROTOR WINDING HALL IS UNDER FACTORY SHED (NOT EXPOSED TO DIRECT SUNLIGHT)



Details of Load

Rotor Load:

Rotor Winding Stations: 6 No.s
Mass of each rotor : 35-55Tons
Mass to be consider for R&AC load calculations: (4X45) : 180Tons

Heating Load:

Brazing M/c Qty. : 4 No.s
Description: 10 Operations each
15mins (per shift per rotor)
Operating Temp. : 500-600°C

Lighting Load Roof:

Lights : 7kW
Fans : 2kW

Others:

EOT Crane Weight : 6Tons
No. of people : 30

BHARAT HEAVY ELECTRICALS LTD.
RAMACHANRAPURAM, HYDERABAD

EM - TECHNOLOGY

DRG NO : 4 - EMT -1802 / 00

A4 SIZE