DEPARTMENT OF APPLIED MECHANICS
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NIQ No. IITD/AM2013/ July 24th 2013

NOTICE INVITING QUOTATION

Please submit technical and commercial bids in separate sealed covers to the undersigned on or before 7th August 2013 for supply of 2 precision air-conditioning units (one working and one stand by) with following specifications:

DESIGN CRITERIA FOR Two Precision AIR CONDITIONING PACKAGE UNITS OF 8 TR CAPACITY (one working and one stand by)

1. Rated capacity : 8 TR (one working and one stand by)
2. Flow direction : Downward flow/ Bottom discharge
3. Air inlet temp. (Return Air) : 21 °C (DB) at 50% RH
4. Saturated discharge Temperature: Maximum 53 °C (at ambient of 43 °C)
5. Ambient air design temperature (Entering the condenser): 43 °C (However the system should be able to work with ambient temp. up to 50 °C)
6. Refrigerant : R407c

SPECIFICATIONS OF A.C. PACKAGE UNIT

1. CABINET

The unit construction should be able to access all the main components of the machine from the front for installation purposes and routine servicing. With this feature, the machines can be installed side by side, or in between cabinets for other technical applications (racks). Outside panels should be coated with grey epoxy-polyester paint. The front panels should be attached to the framework by means of rapid-coupling "fasteners". The standard panels should be lined on the inside with heat- and sound-proofing insulation to class 1.

2. Hermatic sealed scroll COMPRESSOR

1. Compressor Motor should be suitable for operation on 415 V, 50 Hz, 3 phase, AC supply system.
2. Overload protection should be provided in compressor.
3. Gauge Ports should be provided at appropriate location to measure suction and discharge pressures.

3. EVAPORATOR

Heat exchanger (evaporator coil) shall be designed with an ample front surface area in order to ensure a low air flow velocity through the exchanger so as to prevent the entrainment of droplets of condensation, reduce the air's load losses and ensure a more efficient heat exchange during both the cooling and the dehumidifying processes. The exchanger should be situated upstream from the fans to ensure unhindered air distribution and be complete with a GI/stainless steel condensate tray with a flexible conduit for its drainage and an incorporated trap. Coils should be fully accessible from front and **V or A shape type of coil is not acceptable.**

4. FAN

Unit must be provided with **direct driven backward curved EC fans.** The fans should be aligned and balance statically and dynamically.

5. HUMIDIFIER

Immersed cleanable type electrode humidifier having precision drainage and feed, steam supply matching the demand and minimal disruption in steam production should be provided as an inbuilt feature of the package unit.

6. REFRIGERANT PIPING

1. Each refrigerant circuit should be suitable for operation on R 407C and include the following items:
    a. Electronic Expansion Valve
    b. Removable liquid line filter drier with hand shut off valves
    c. Liquid Line sight Glass with moisture indicator
    d. suitable charging valves
2. The serviceable/removable components should have union connections for easy removal/assembly.
3. All pipe works should be carried out with refrigerant quality copper tubes and where bends are required these should be completed using either a proprietary bending tool or radius fittings. The minimum thickness of pipe should be 18 gauges.

7. ELECTRICAL SYSTEM

1. A main incoming MCB of suitable rating for each AC package unit should be provided on the unit.
2. Within the panel individual power loads should be distributed equally across the three Phases.
3. All individual wires should be of copper and color coded or should be numbered at their point of termination to facilitate servicing.
4. Low voltage control wiring and power wiring should be segregated from each other.
5. Heaters shall be suitably provided with insulators, safety thermostats and contactors.
6. The following should be incorporated:
    i.) MCB of suitable rating for each sub-circuit.
    ii.) Overload protection for individual 3 phase motors.
    iii.) Single Phase preventer at the incoming supply of each package unit.

8. REMOTE AIR COOLED CONDENSER.

The condenser should have fan speed regulator for the purpose of power saving.

9. CONTROLS

1. High pressure trip – Auto /Manual reset (for each compressor)
2. Low pressure trip – Auto /Manual reset (for each compressor)

10. SAFETY INTERLOCKS

1. Interlock between condenser fan motor and compressor motor to prevent starting of compressor without condenser fan in operation.
2. Condenser fan should stop along with compressor.
3. Provision may be made to operate the evaporator fan without the operation of condenser and compressor.

11. Micro-processor based CONTROLLER for individual units:

1. Unit control, communication and monitoring of package unit.
2. May be used to combine with multiple package units into a team that operates as a single entity.
3. Menu driven display for all programming functions on each connected package units.
4. This display can be used to control a single package unit or any package unit on a network, regardless of how it is connected – either integrated into a package unit or simply connected to the network and mounted remotely.
5. The status menu should show status of conditioned space, such as room temperature and humidity, temperature and humidity set points, alarm status and settings, event histories and the current time.
6. Password protected for authorized access only.
7. Sequencing: The two PAC units should have sequencing as an inbuilt feature. The units should be designed to work for equal no. of run hours. In case of fault, the stand by unit should start. The units should have weekly programmer. External time based sequential box not accepted.

12. BMS card: for data transfer to a central supervisor system with STD/ MODBUS protocol

13. WATER LEAK DETECTOR

14. Filtration

Air filters of box type, made of self-extinguishing, artificial-fiber cellular material. **Low airflow and clogged filter alarm sensors** consisting of two pressure switches for controlling the operating conditions of the fans and the build-up of dirt on the air filters inside the unit.

Low side (Precision AC)

1. Loading, unloading, installation, testing and commissioning of both PAC units
2. Indoor and outdoor unit stands for both PAC units
3. R407c refrigerant charging: 30 kgs
4. Indoor to outdoor copper piping for DX units: 25 RMT * 2units = 50 RMT
5. Humidifier drain piping: 10 RMT*2units = 20 RMT
6. Condensate drain piping: 10 RMT*2 units = 20 RMT
7. Power cables: 20 RMT*2 units = 40 RMT
8. Sequencing cable CAT 6: 15 RMT
9. Powder coated aluminium floor grills (600mm*600mm): 4 in number

Please give break-up of prices for two precision AC units and Low side (precision AC) while quoting total price in the commercial bid.

Terms & Conditions:

Warranty	3 years comprehensive onsite (parts + labor) warranty.
	24/7 technical support
Eligibility criteria for the Company	Delivery should be within 4 weeks after purchase order is issued.
	If the quote is submitted by the representative of Principals/Manufacturers, a valid Agency ship/dealership Certificate/MAF **specific to this tender** should be enclosed together with technical bid.
	The bidder must have presence in the Indian market for at least 3 years.
	The bidder must have installation base of at least 5 precision ACs in various agencies of 8 TR rating or above.
	The bidder should be ISO certified (copy of ISO certificate should be enclosed with technical bid).
METHOD OF SUBMISSION	Quotations should be sent in a sealed separate cover marked **technical** and **commercial** bids at the top along with our NIQ reference no. and due date. Including commercial information in the technical bid would be grounds for disqualification.
Technical Bid Details	**Technical Compliance Sheet**: Clear and detailed information on *how* the technical conditions specified above have been complied with must be given in the technical portion of the bid via a technical compliance sheet. It is insufficient to just mention "Complied" against the above specifications. The technical sheet should contain details of the *precise* OEM, model no. etc.
	Warranty: Warranty information must be explicitly provided in the technical sheet.
Commercial Bid Details	**Breakup**: A clear breakup of the individual price of the items should be provided.
	Tax/Import: Any taxes/import duties that are expected must be added to the total and the final price should be provided. If any tax/custom duty waiver that has been assumed should be clearly mentioned. Not providing either of these could lead to disqualification. PLEASE ALSO SEE BELOW FOR TERMS AND CONDITIONS FOR ALL IIT DELHI PURCHASES. These terms are valid for the current purchase also.
Buyer's Rights	Buyer reserves the right of accepting or rejecting any/ all quotations.
Validity of Quotations	Quotations will be considered valid for at least three months from the date of receipt unless otherwise stated.
Correspondence	No correspondence regarding acceptance/rejection of a quotation will be entertained.
Rejection	Quotations not conforming to the set procedure as above are liable to be rejected.
Discount/Rebates	Any discount/rebate wherever admissible keeping in view that the supply is being made for educational purposes in an institute of national importance should be indicated.

Sd/-
(Dr. Ajeet Kumar)

Necessary Terms and Condition to be put in the NIQ/NIT Document

1. IIT Delhi is exempted from paying custom duty under notification No.51/96 (partially or fully) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information.
    a. Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists)
    b. Forwarder details i.e. Name, Contact No., etc.

   Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute and Bills of Entry should be submitted to IIT Delhi later on.

2. Either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.

3. If the bidder is an authorized dealer of any manufacturer, the authorized Indian dealership certificate from the principles should be enclosed. Similarly, proprietary certificate for proprietary items should be provided.

4. IIT Delhi is exempted from paying Excise Duty and necessary Excise Duty Exemption Certificate will be provided for which following information are required.
    a. Quotation with details of Basic Price, Rate & Amount on which ED is applicable.

5. Please quote prices of imported items at FOB (Freight on Board) IIT Delhi inclusive of all taxes, freight, delivery, installation and onsite training charges. The quotation should provide the total price of the system including all taxes and transportation charges.

6. Three years comprehensive warranty be provided and AMC price beyond 3 years should be mentioned separately.
   Payment Options (any one to be chosen by the Department/ center)
   Letter of Credit: 90% payment against shipping documents & balance 10% after satisfactory installation. For large purchase i.e. costing over Rs. 1 crore, 100% payment be made through LC.
   Sight Draft: Payment against documents through bank.
   Against Delivery: Payment by wire transfer after receipt of material.
   Advance payment: pre-payment by wire transfer (for orders less than Rs. 5 lakh)

7. Delivery period: within 1 month from the issue of supply order.

8. Warranty: at least 3 years onsite warranty should be provided.

9. The quotations must have validity of at least three months.

10. The products will be used for educational purposes. Any applicable academic institution discounts should be offered and stated clearly.

11. Authority of IIT Delhi reserves the right to reject any or all quotations without assigning any reasons.