

**SHORT TERM NOTICE INVITING TENDER ENQUIRY (Urgent Requirement)**

No. NU/Engg/Electrical/AJH/607

Dated: 20.09.2017

# **E-TENDER DOCUMENT**

## **FOR SITC OF WATER COOLED VARIABLE REFRIGERANT FLOW (VRV) SYSTEM**

### **PREFACE:**

Nalanda University Campus is designed for the Net- Zero campus and approximately 3.7 Lakhs sqm area is proposed to buildup. Accordingly the majorly two types of Air-Conditioning is proposed. One of them water cooled VRV system for heating and cooling both the facility this VRV is proposed. Before entering into main tendering for this air-conditioning, the University intends to have hands on expertise/experience on the same so that the rectification, if any, may be incorporated in the future package. In the same context, the University has proposed to setup a primary medical center at the Ajatshatru campus for which Air-Conditioning and heating is required.

Hence, the University has decided to undertake a PILOT test for the system as explained in this tender.

Looking to the power backup in the Proposed Medical Center of the University at Ajatshatru Campus, Rajgir and upcoming project in the main campus, The University has decided to install a VRV system.

On the basis of performance in all respect from this module, the University may incorporate the experience accordingly.

Tender: E-tender as per the scheduled time line, however both the envelope (Envelope – I: must contains the documents pertaining to the techno commercial and eligibility criteria and Envelope-II: must be contain the Price bid in the prescribed format only)

**Rajgir, District: Nalanda, Bihar – 803 116**

**Ph. No: 06112 255330**

**Web: [www.nalandauniv.edu.in](http://www.nalandauniv.edu.in)**

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To

1. (As per list Attached – Gathered from impalement list of MNRE, GOI)
2. Notice Board(NU)
3. Notice Board of CPWD, Patna
4. CPPP website (E-Tender Id No: 2017\_NUNIV\_248371\_1)
5. NU website
6. Open for all the eligible bidders as per the MNRE guidelines

Dear Sir(s)/Madam

On behalf of the honourable Vice Chancellor, Nalanda University, Rajgir, Bihar, eligible bidders are being invited to submit quotation under two Envelope System (Techno commercial, Tender Processing, EMD fee along with eligibility credential in Envelope-I and Price Bid) for “**providing and fixing of water based VRV system at Proposed Medical Center in Ajatshatru Residential campus of Nalanda University at Rajgir, Bihar**” as per the Schedule of Quantities enclosed herein below as Annexure I and as per the Terms & Conditions specified here under:

1. The tender shall be accompanied with the following documents:

The Tender must be addressed to the Tender Accepting Authority as indicated below:  
The Registrar, Nalanda University, Rajgir. Bihar-803116.

- a. Demand Draft against the EMD @ INR 10000.00 & the Tender Processing Fee @ INR 1000.00, credential, if any, along with price bid shall be placed in a sealed Envelope. Copies of certificates of work experience and other prequalifying documents such as registered/impaneled contractor s in MNRE/ CPWD/ or in any ministries or in any state govt for same category of work. The demand draft must be in favor of “**Nalanda University**” Payable at Rajgir.
- b. Bill of quantities duly filled in and compiled with rates, amounts, of the same and other relevant commercial information (tender) signed by authorized signatory shall be placed in the same envelope.
- c. The bidders shall be evaluated as per the GFR-2017, GOI, the University’s Financial Regulations and MNRE guidelines.

**2. Critical Dates:**

Particulars	Dates	Remarks, if any
Tender Issued vide dispatch no 606 dated 20 <sup>th</sup> September 2017	20 September 2017	
Clarification Start Dates	21 <sup>st</sup> September 2017	
Pre-bid meeting	26 <sup>th</sup> September 2017 , 1230 Hours	In-order to attract the maxim participation, to explain the University required, reply to the queries and also understand the industry technical practice for better solution, if any, the bidders are welcome to attend the pre-bid meeting at the University Interim campus. Bidders, who are unable to attend the pre-bid meeting may also submit their queries in written by the 26 <sup>th</sup> September 2017, 1130 Hours.
Online submission end date	11 <sup>th</sup> October 2017, 1500 Hours	Mandatory
Off line submission End date	12 <sup>th</sup> October 2017, 1500 Hours.	Hard copy in original required for evaluation
Technical Bid opening date	12 <sup>th</sup> October 2017, 1530 Hours.	Bidders may be present to witness the opening
Financial Bid opening date (Tentatively)	15 <sup>th</sup> October, 2017	Financial bid shall be opened to only qualified bidders in the technical round. In case of chance in date, if any, shall be intimated separately.

**3.** Venue for Submission & opening of Quotations: Interim Campus of Nalanda University, At – Chhabilapur Road, Rajgir, District–Nalanda, Bihar – 803116.

**4.** The tender shall be administer as per the University rule and revealing CPWD/GFR rules.

**5.** Eligibility:

The Contractor must be registered in CPWD/MNRE/Any Govt Department for similar category of work. Or contractor have completed similar work may also apply. Or, Contractor authorized by the impaneled manufacturer OR OEM of VRV or Dealer of manufacturer as per this NIT may also be participate. The contractor authorized by the

manufacturer/dealer of preferred make may also participate. Similar work definition as per the CPWD norms.

- 6.** Warranty: Minimum THREE year on the complete system and the SD may be released on the prorata basis. On account of delay of more than 24hrs of complaint during the warranty period INR 250 per day and may be charged as penalty.
- 7.** Security guaranty during defect liability period @ 2.5% of tendered amount shall be deducted from running bills and it may be released on submission of FDR/BG of requisite amount. On successful completion of each year the security amount shall be release on prorata basis.
- 8.** Contractor:  
The Contractor shall mean the individual, firm or company, whether incorporated or not, undertaking the works and shall include the legal personal representative of such individual or the persons composing such firm or company, or the successors of such firm or company and the permitted assignees of such individual, firm or company.
- 9.** Mode of Submission:
  - a. The quotation may be sent by post or may be dropped in the Tender Box of the Nalanda University, Rajgir, placed in the Reception, on or before due date & time of receipt of offer as indicated above. Quotations which do not reach this office latest by 3:00 PM on the due date, will not be opened and will be summarily rejected. The Nalanda University will not be responsible for any delay in receipt of quotation by post whatsoever may be the reason.

Copy of Certificates of PAN card, copy of the GST registration (if applicable) is to be submitted along with the quotation.

NALANDA UNIVERSITY will not be bound by any Power of Attorney granted by the Bidder or changes in the constitution of the firm made subsequent to submission of the bid or after the award of the contract. The University may, however, recognize such Power of Attorney and changes after obtaining proper legal advice, the cost of which will be borne by the Bidder.

The cancellation of any document such as Power of Attorney, Partnership Deed etc. should be communicated by the Bidder to the NALANDA UNIVERSITY in writing well in time, failing which NALANDA UNIVERSITY shall have no responsibility or liability for any action taken by NALANDA UNIVERSITY on the strength of the said documents.

- 10.** Validity of Quotations:  
The offer shall be kept valid for a period of 90 days (Ninety days) from the date of opening of quotation.
- 11.** Prices:  
The Bidder should quote the final rates in both figures and in words (English) system as per the format provided in Schedule of Quantities (Annexure I). The amount for each item should be worked out and entered. Prices shall be quoted in Indian National Rupees (INR) only. This enquiry is based on door delivery principle which implies that the successful contractor will be responsible for fulfilment of any statutory payment in accordance of the

Govt of India. The taxes will be as per the guidelines of GOI. However, no any additional charges like transportation or any other charges shall be paid extra.

**12. Billing & Payments:**

The Contractor shall submit the bill(s) / invoice(s) in a format to be decided between the NALANDA UNIVERSITY and the Contractor. The NALANDA UNIVERSITY shall release the payments within 15 Days from the date of receipt of the Bill(s)/ invoice(s) duly certified by Engineer in-charge along with necessary supporting documents, if found in order. However, the sequence for releasing payments shall be as detailed below:

- a. 90 % payment shall be released after successful supply, Installation, Testing and Commissioning of the wiring job in accordance of the MNRE/CPWD guidelines.
- b. Remaining 10% after successful completion of three months.

**13. Time Schedule:**

The time stipulated for completion of job (Providing & Fixing both) in all is 45 days from issuance of letter of award or purchase order.

**14. Nalanda University's Rights:**

NALANDA UNIVERSITY reserves the right to accept a quotation other than the lowest and to accept or reject any quotation in whole or part, or to reject all the quotations received with or without assigning any reasons.

**15. Extension Order:**

Repetition of order: If required, Nalanda University reserves right to place 100% extension order or part hereof awarder work order on company subjected to the condition within one year from date of order.

- 16.** Additional quantity other than SOQ: Nalanda University reserves right to place an extension order for any additional quantity to extent of 100% quantity of the original order on the same rates subjected to the condition within one year from date of order. However payment will be based on actual measurement of work.

**17. Liquidated Damage:**

If work is not completed within specified period a liquidation damage will be charged from contractor @ 0.5% per week from contractor up to maximum of 5% of contract value of tender.

**18. Acceptance:**

It is not binding to the University to accept the lowest or any tender. The Nalanda University reserves the right to accept or reject any offer at its option or place order with more than one supplier for full or part quantity of this enquiry without assigning any reason and the same shall be binding on suppliers unless otherwise stated in the offer. The University may cancel or reject the offer/order at any time without assigning any reasons. No correspondence shall be entertained on this account.

**19. Disputes:**

All disputes, if any, out of or in respect of this enquiry are to be settled at Rajgir or be tribunal only in any competent court situated at Rajgir, Bihar. Stated specifically to the

contrary, it shall be deemed that you have agreed to all terms and conditions mentioned in the enquiry and the same shall be binding on you.

**20. List of Approved Makes**

SL	Item	Makes
5	VRV	Mitsubishi, Samsung , LG , Daikin
6	Cables and wires	Polycab/Gloster/Havells/KEI/RPG
7	Cable Lugs	Dowels/Asian/comet
8	Cable Glands	Dowels / Asian/comet
	Others	As per the Engineer In-Charge

**21. Check List:**

**The Envelope I superscripted with "Providing and fixing of water based VRV for Cooling and Heating both at Medical Center, Ajatshatru Residentail Campus addressed to the Registrar, Nalanda University, Rajgir must contains as indicated Below:**

- a. Tender Processing Fee and EMD
- b. Copy of Certificates of PAN card, copy of the GST registration, power of attorney for authorization to sign and submit the tender on behalf of the firm, if applicable.
- c. Signed copy of the NIT which means that bidder is accepting all the terms and conditions of this enquiry.
- d. The price bid offer in the prescribed format as per the **Annexure-I**. The price bid must be sealed

**Envelope II: Price bid in the prescribed format.**

**22.**For any clarification may contact to the following officials:

Mr. Manoj Kumar, AE (E) @ +91-7033698507 [E-mail: [mkumar@nalandauniv.edu.in](mailto:mkumar@nalandauniv.edu.in) ]

24 TECHNICAL SPECIFICATIONS.

## **WATER COOLED VARIABLE REFRIGERANT FLOW SYSTEM (VRV)**

### **1. OUTDOOR UNIT**

#### **1.1 SCOPE:**

**The scope of this section comprises the supply, erection testing and commissioning of inverter based Variable Refrigerant Volume System with Scroll Compressor conforming to these specifications and in accordance with the requirements of Drawing and Schedule of Quantities. The VRV shall be strictly verified and correlate with schedules.**

## 1.2 TYPE

**Units shall be water cooled heat pump type, variable refrigerant volume air conditioner of R410A gas based consisting of outdoor unit and multiple indoor units. Each indoor units having capability to cool or heat independently for the requirement of the rooms.**

It shall be possible to connect several indoor units on one refrigerant circuit. The indoor units on any circuit can be of different type and also controlled individually. Compressor installed in each modular outdoor unit shall be equipped with Scroll / rotary compressors for higher reliability, improved life, better backup and duty cycling purpose. Outdoor unit shall be suitable for mix match connection of all type of indoor units.

Following type of indoor units shall be connected to the system:

- Wall Hung Units
- Fan Coil Unit

Both indoor units and outdoor unit shall be factory assembled, tested and filled with first charge of refrigerant before delivering at site.

The refrigerant piping between indoor units and outdoor unit shall be possible to extend up to a minimum of 165m with maximum 50m level difference without any oil traps.

### 1.2.1 OUTDOOR UNIT

The outdoor unit shall be factory assembled, weather proof casing, constructed from heavy gauge mild steel panels and coated with baked enamel finish. The unit should be completely factory wired tested with all necessary controls and switch gears:

The outdoor unit shall be modular in design and should be allowed for side by side installation. The outdoor unit shall be provided with welded steel support with two coats of paint for erection purpose.

- All outdoor units above 8 HP shall have minimum two scroll compressors and be able to operate even in case one of compressor is out of order.
- It should also be provided with duty cycling for switching starting sequence of multiple outdoor units.
- The noise level shall not be more than 68 dB (A) at anechoic chamber conversion value, measured horizontally 1m away and 1.5m above ground level.
- The outdoor unit shall be modular in design and should be allowed for side by side installation
- The unit shall be provided with its own microprocessor control panel.

The outdoor unit should be fitted with low noise, aero spiral design fan with large airflow and should be designed to operate compressor-linking technology. The

unit should also be capable to deliver 78 Pa external static pressure to meet long exhaust duct connection requirement wherever applicable and per drawings and schedules.

The condensing unit shall be designed to operate safely when connected to multiple fan coil units, which have a combined operating nominal capacity up to 130 % of indoor units.

### **1.2.2**     COMPRESSOR

The compressor shall be highly efficient scroll type and capable of inverter control. It shall change the speed in accordance to the variation in cooling or heating load requirement:

The inverter shall be IGBT type for efficient and quiet operation.

All outdoor units shall have at least 10 to 30 steps of capacity control to meet load fluctuation and indoor unit individual control. All parts of compressor shall be sufficiently lubricated stock. Forced lubrication may also be employed. Oil heater shall be provided in the compressor casing. C.O.P for the units shall not be less than 4.5.

### **1.3**     HEAT EXCHANGER

The heat exchanger shall be constructed with copper tubes mechanically bonded to aluminum fins to form a cross fin coil.

The aluminum fins shall be covered by anti-corrosion resin film.

The unit shall be provided with necessary number of direct driven low noise level propeller type fans arranged for vertical discharge. Each fan shall have a safety guard.

### **1.4**     REFRIGERANT CIRCUIT

The refrigerant circuit shall include liquid & gas shut-off valves and a solenoid valves at condenser end.

All necessary safety devices shall be provided to ensure the safely operation of the system.

### **1.5**     SAFETY DEVICES

All necessary safety devices shall be provided to ensure safe operation of the system.



Following safety devices shall be part of outdoor unit; high pressure switch, fuse, crankcase heater, fusible plug, over load relay, protection for inverter, and short recycling guard timer.

#### 1.5.1 OIL RECOVERY SYSTEM

Unit shall be equipped with an oil recovery system to ensure stable operation with long refrigeration piping lengths.

### **1.6 INDOOR UNIT**

This section deals with supply, installation, testing, commissioning of various type of indoor units conforming to general specification and suitable for the duty selected. The type, capacity and size of indoor units shall be as specified in detailed Bill of Quantities

#### 2.1 GENERAL

2.2 Indoor units shall be ceiling mounted cassette type, ductable, wall mounted and as specified in BOQ. These units shall have electronic control valve to control refrigerant flow rate respond to load variations of the room.

a) The address of the indoor unit shall be set automatically in case of individual and group control

b) There shall be localized control only.

2.3 The fan shall be dual suction, aerodynamically designed turbo, multi blade type, statically & dynamically balanced to ensure low noise and vibration free operation of the system. The fan shall be direct driven type, mounted directly on motor shaft having supported from housing.

2.4 The cooling coil shall be made out of seamless copper tubes and have continuous aluminum fins. The fins shall be spaced by collars forming an integral part. The tubes shall be staggered in the direction of airflow. The tubes shall be hydraulically/ mechanically expanded for minimum thermal contact resistance with fins. Each coil shall be factory tested at 21kg/sqm.air pressure under water.

2.5 Unit shall have cleanable type filter fixed to an integrally moulded plastic frame. The filter shall be slide away type and neatly inserted.

2.6 Each indoor unit shall have computerized PID control for maintaining design room temperature. Each unit shall be provided with microprocessor thermostat for cooling and heating.

2.7 The outdoor unit shall be pre-charged with first charge of R 410A refrigerant. Additional charge shall be added as per refrigerant piping at

site. All the units shall be suitable for operation with 380 - 415 V 50 Hz + 3%, 3 Phase supply for outdoor units & 220 – 240 V, 50 Hz + 3%, 1 Phase supply for in-door units.

- 2.8 The units shall be integrated with Fire Alarm system and in case of fire all units shall be switched off.
- 2.9 The AI fins of Condenser Coils shall be provided with suitable factory installed protective for corrosion prevention.
- 2.10 The outdoor units must be suitable for up to 150m (straight length) refrigerant piping between outdoor unit & the farthest indoor units, total piping of 500m for all the indoor units. Allowable level difference between outdoor unit & indoor units shall be 50m in case of outdoor unit on top & 40 m in case of outdoor unit at bottom. Allowable level difference between various indoor units connected to one out door unit shall be up to 15m.
- 2.11 The outdoor unit shall employ system of equal run time for all the compressors, inverter or on/ off type, within each outdoor unit – Single Module or Multi Module.
- 2.12 The outdoor units shall be suitable to operate within an ambient temperature range of – 5 Deg C to 48 Deg C, in cooling mode & -20 Deg C to 15 Deg C in heating mode.
- 2.13 Water cooled condenser shall have shell and tube type configuration to remove the heat from the condenser coil with the help of water.
- 2.14 The entire operation of outdoor units shall be through independent remotes of indoor units. No separate Start/ Stop function shall be required.
- 2.15 Starter for the Outdoor Unit compressor shall “Direct on Line” type. Inverter compressor of the unit shall start first & at the minimum frequency, to reduce the inrush current during starting.
- 2.16 Refrigerant control in the outdoor unit shall be through Electronic Expansion Valve. Complete refrigerant circuit, oil balancing/ equalizing circuit shall be factory assembled & tested.
- 2.17 Outdoor units shall be complete with following safety devices:
- a) High pressure switch
  - b) Fan driver overload protector
  - c) Over current relay
  - d) Inverter Overload Protector
  - e) Fusible Plug

Enclosed: Annexure I – Schedule of Quantities

**Yours Sincerely**

No. NU/Electrical/AJH/607

 Dated: 20<sup>th</sup> September 2017

Annexure I (Please submits this on the firm/bidder's letter head)

**Schedule of Quantities for the providing and fixing of the following items:**

SI	Particulars	UNIT	QTY
1	<b>Supply of (VRF System) water Cooled Outdoor Unit with DC Inverter Scroll Compressor &amp; Black Fin Condenser (Heating/Cooling), 53 degree operating temp.</b>		
1.1	OUTDOOR UNIT of 10 HP ODU with stand	<b>Each</b>	<b>1</b>
2	<b>Indoor Unit</b>		
2.1	1.0 Tr. Hi Wall	<b>Each</b>	<b>1</b>
2.2	1.3 Tr. Hi Wall		<b>1</b>
2.3	1.5 Tr. Hi Wall		<b>2</b>
2.4	2 Tr. Hi Wall U Unit	<b>Each</b>	<b>2</b>
2.5	Wireless Remote	<b>Each</b>	<b>6</b>
2.6	Y - Branch Nos.	<b>Each</b>	<b>6</b>
3	<b>Low Side work Installation, Testing &amp; Commissioning of VRF Water Cooled System</b>		
3.1	<b>ODU Unit: a. 10 HP ODU (Top Discharge)</b>	<b>Each</b>	<b>1</b>
4	IDU Unit : 1 Tr. Hi Wall U Unit	<b>Each</b>	<b>1</b>
4.1	IDU Unit : 1.3 Tr. Hi Wall U Unit	<b>Each</b>	<b>1</b>
4.2	IDU: 1.5 Tr. Hi Wall U Unit	<b>Each</b>	<b>2</b>
4.3	IDU: 2 Tr. Hi Wall U Unit	<b>Each</b>	<b>2</b>
5	Cu. Ref pipe with standard Insulation both Liquid & Suction	<b>Meter</b>	<b>30</b>
6	Control cabling between IDU & ODU (2 Core 1.5Sqmm)	<b>RMT</b>	<b>50</b>
7	Charging of R 410A Refrigerant KGs	<b>KG</b>	<b>5</b>
8	<b>Installation, Testing &amp; Commissioning of VRV System</b>		
8.1	Drain piping (UPVC)	<b>RMT</b>	<b>25</b>
8.2	Water Cooling Tower	<b>Each</b>	<b>1</b>
8.3	Motor Pump	<b>Each</b>	<b>2</b>
8.4	GI Pipe (150 mm Dia)	<b>RMT</b>	<b>15</b>

**NOTE:**

1. Above price should be inclusive of each and every charge. Nalanda University should not be liable to pay any extra charges beyond price quoted above. The statutory taxes shall be paid by the bidder. However, bidder may claim as per the actual and statutory compliance. The IGST, GST Entry tax shall or any other statutory taxes shall be applicable as per the guidelines of the Govt of India.
2. While quoting the prices, the quality of material and works shall be confirming to the applicable standards.
3. Rates in various tapering steps shall not be considered.
4. The offers, with rates given in any other format (other than mentioned above) may be liable for rejection.

Bidders Signature  
Designation and rubber stamp of of the company/firm