

REF: IS-1-13-2000

**PRE- QUALIFICATION REQUIREMENT FOR BIDDERS  
FOR 2 X 660MW SURATGARH SPLIT AIR CONDITIONER**

**(I) TECHNICAL CRITERIA****SPLIT AIR CONDITIONER:**

- A. The Bidder must be RRVUNL approved OEM or stockiest/ trader/ distributor/ dealer/ authorized agent/ channel partner of RRVUNL approved OEM of split AC. RRVUNL approved OEMs of split Ac are Voltas, Blue Star, Carrier, Hitachi.
- B. The Bidder should have executed supply of minimum 20 numbers of Split AC of 1 to 2.5 TR in any one year, during last 7 (seven) years as on date of bid opening.

**NOTES:**

1. Authorized agent shall possess letter from the manufacturer stating that they are authorized to stock, distribute and/or sale of ACs on behalf of the approved manufacturer. Authorized dealer shall submit the authorization letter from the OEM along with the bid.
2. Bidder shall submit requisite documents like customer PO copies, work order copy, dispatch documents/invoices etc to comply with above criteria, properly indexed, along with the offer.
3. Consideration of bidder shall be subject to approval of end customer (M/s RRVUNL)/ BHEL. Bidder shall submit credentials /details, if required by customer, for seeking approval of end customer.

Bidder shall submit details of experience, i.e., jobs executed, jobs in progress in the format indicated below.


**FORMAT:**

Sl. No.	Name of the Project	Brief Scope of the work	Order Ref. No & Date	Date of Supply/ Completion As per P.O.	Remarks

**4. FINANCIAL CRITERIA**

1. Bidder should have an average turnover of **Rs. 7.5 Lacs** during last three financial years ending **31st March 2023.**


1471341/2023/ISG-E&amp;C

BHEL- ISG, BANGALORE  	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) <b>TECHNICAL ENQUIRY SPECIFICATION FOR BALANCE SUPPLY OF SPLIT AIR CONDITIONER</b>	<b>DOCUMENT NUMBER</b>  IS-1-13-2000/AC
	Customer : RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LTD.	Rev. no.: 00 Dtd: 25-04-2023

TECHNICAL ENQUIRY SPECIFICATIONS FOR  
SUPPLY & INSTALLATION OF SPLIT AIR CONDITIONERS


	Prepared By	Checked by	Approved by
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### CONTENTS

Sl. No.	DESCRIPTION
1.0	PROJECT INFORMATION
2.0	BROAD SCOPE
3.0	TECHNICAL REQUIRMENT
4.0	LIST OF ENCLOSURES


BHEL- ISG, BANGALORE  	2X660 MW Suratgarh Super critical TPS, Stage-V, (Unit-7&8) <b>TECHNICAL ENQUIRY SPECIFICATION FOR BALANCE SUPPLY OF SPLIT AIR CONDITIONER</b>	<b>DOCUMENT NUMBER</b>  IS-1-13-2000/AC
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## 1.0 PROJECT INFORMATION

Coal handling plant for 2X660 MW Suratgarh Thermal Power Station (Unit - 7 & 8) of Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL) proposed plant as described in the NIT specs. Salient features of the Project site are,

<b>1.1</b>	<b>GENERAL SITE CONDITIONS</b>	
1.	Owner / Purchaser	: Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (RRVUNL)
2.	Engineer/consultant	: Tata Consulting Engineers Ltd (TCE) 73/1, St. Marks Road, Bangalore – 560 001
3.	Project Title	: 2 x 660 MW, Super-Critical TPS, Stage-V, Unit # 7 & 8 at Suratgarh, Rajasthan
4.	Project location	: Prabat Nagar, Suratgarh, Sriganganagar district, Rajasthan.
5.	Elevation (above Sea level)	: 186 m (approximate)
6.	Temperatures : Monthly basis	: Mean of daily max. 32.8 deg.C (in the month of May) Mean of daily min. 17.6 deg.C (in the month of Jan)
7.	Temperatures : Annual basis	: Mean of daily max. 32.3 deg.C Mean of daily min. 19.6 deg.C
8.	Highest temperature recorded	: 50 deg.C
9.	Lowest temperature recorded	: (-) 2.8 deg.C
10.	Design temperature	: 50 deg. C
11.	Relative humidity	: Varies between 21% and 81%
12.	Annual average rain fall	: 312 mm
13.	Annual mean wind speed : Calculations for wind effect shall be in accordance with IS:875-1987(Part-3) taking into account the following	: 4 km/hr a) Basic wind speed = 47 m/sec b) Factor K1 = 1.07 c) Category of terrain = Category 2 d) K3 – as per IS 875
14.	Seismic data (As per IS: 1893 latest issue)	: Zone II Designs & design coefficients will be based on IS 1893:2002
15.	Nearest railway station	: Suratgarh JN
16.	Nearest airport	: Jaipur
<b>1.2</b>	<b>POWER SUPPLY SYSTEMS</b>	
1.2.1	<b>MV System</b>	
1.	System Voltage	: 6.6 kV $\pm$ 10%, 3 Phase, 3 wire
2.	System Frequency	: 50 Hz $\pm$ 5%

1471341/2023/ISG-E&amp;C

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3.	Combined Variation	:	10% (absolute)
4.	System Fault level	:	40 kA for 3s
5.	System Earthing	:	Non effectively earthed
6.	Drives	:	161-1500kW
1.2.2	LV System		
1.	System A.C voltage	:	415 V $\pm$ 10%
2.	System Frequency	:	50 Hz $\pm$ 5%
3.	Combined Variation	:	10% (absolute)
4.	Phase	:	3 ph, 3- wire
5.	System fault level	:	50 kA for 1s
6.	System Earthing	:	Solidly grounded
7.	Panel space heater, lighting, AC Control & Protection Supply	:	240V, Single phase
8.	Drives	:	up to 160kW
1.2.3	DC System		
1.	System Voltage	:	220V, +10%, -15%, 2-wire
2.	Fault level	:	20 kA
3.	System Earthing	:	Unearthed


## 2.0 BROAD SCOPE:

The scope of work of this package shall include the following:

Design, Manufacturing, Supply, transportation to site, installation of Split ACs as per following BOQ

SL.NO.	ITEM DESCRIPTION	UNIT	QTY
	<b>AIR CONDITIONING SYSTEM PACKAGE</b>		
	Split Air conditioning system for the CHP along with accessories Outdoor unit fixing (up to 10 mtr from IDU) along with additional Copper tube, insulation and wall mounted stand, Fittings, Drain Pipe (PVC) $\Phi$ 25 MM etc. and including all associated Electrics as per the scope mentioned in Technical Enquiry Specifications.		
<b>A</b>	<b>SUPPLY and INSTALLATION OF SPLIT AIRCONDITIONER</b>		
<b>A.1</b>	SPLIT AIRCONDITIONER, 2.5 TR (Indoor/Outdoor unit) including outdoor unit fixing arrangements and drain pipe	Nos	22
<b>A.2</b>	SPLIT AIRCONDITIONER, 2 TR (Indoor/Outdoor unit) including outdoor unit fixing arrangements and drain pipe	Nos	14
<b>A.3</b>	SPLIT AIRCONDITIONER, 1.5 TR (Indoor/Outdoor unit) including outdoor unit fixing arrangements and drain pipe	Nos	3
<b>A.4</b>	SPLIT AIRCONDITIONER, 1 TR (Indoor/Outdoor unit) including outdoor unit fixing arrangements and drain pipe	Nos	4
<b>B</b>	<b>SUPPLY and INSTALLATION OF ELECTRICAL ITMES</b>		

1471341/2023/ISG-E&amp;C

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<b>B.1</b>	All electrics like 3ph/1ph 415/230 V MCB with box, supply laying & termination of power cables from MCB box to Indoor/Outdoor unit etc. related to A	Lot	1
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**TECHNICAL REQUIREMENT:**

- 1) Item- Hi-Wall Split Air Conditioning Unit
- 2) MAKE- Voltas / Blue Star / Carrier / Hitachi
- 3) Star Rating- 3 Star Rating
- 4) Tonnage- 2.5/2.0/1.5/1.0 TR
- 5) Refrigerant Gas- R32
- 6) Power Supply- [V/Ph] 230 Single Phase/415 Three phase;
- 7) Condenser Coil- Copper
- 8) Noise Level - Indoor dB(A)] (51)49/46/44
- 9) Max operating Ambient Temp Range- [Deg C] 52
- 10) Wide Operating Voltage Range- [V] 100~415
- 11) Indoor Unit Features- LCD Remote, LED Display
- 12) Make of MCB : Siemens/Havells/ABB/L&T

Notes for installation services:

- a) Necessary modification of the walls including re-plastering (if required) to install the split AC shall be done by the successful bidder

**4.0 LIST OF ENCLOSURES:**

Following enclosures is an integral part of this technical enquiry and must be signed and stamped/ digitally signed and submitted along with the offer:

BOQ FOR SCOPE OF WORK

PQR

Annexure-01- Design conditions for Air conditioning system

Annexure-02- Approved vendor list

## **2. Outside Design Conditions**

Based on outside design data specified for Suratgarh-Technical Specification for Air Conditioning System , the outdoor design conditions for Suratgarh have been considered as follows:

Summer	: Dry Bulb Temperature	45.00deg C (113.00deg F)
	: Wet Bulb Temperature	23.9 deg C (75.00 deg F)
	: Relative Humidity	16.60%
	: Humidity Ratio	69.9 grain/lb
Monsoon	: Dry Bulb Temperature	37.20 deg C (98.60 deg F)
	: Wet Bulb Temperature	26.70 deg C (80.06 deg F)
	: Relative Humidity	45.2%
	: Humidity Ratio	125.96 grain/lb
Winter	: Dry Bulb Temperature	7.20 deg C (45.00 deg F)
	: Wet Bulb Temperature	5.00 deg C (41.00 deg F)
	: Relative Humidity	71.6%
	: Humidity Ratio	31.6 grain/lb

## **3. Inside Design Conditions**

Based on Insidedesign data specified in Technical Specification for Air Conditioning System , the inside design conditions for Air Conditioned Area have been considered as follows:

Summer/Monsoon/Winter	: Dry Bulb Temperature	22±1deg C (71.6deg F)
	: Wet Bulb Temperature	15.4 deg C (59.75 deg F)
	: Relative Humidity	50±5%
	: Humidity Ratio	57.8 grain/lb

POINT	DB	WB	RH	W	v	h	DP	d	vp	AW
Summer	113.0	75.0	16.6	69.8713	14.66	38.21	57.1	0.0689	0.471	4.765
Monsoon	98.6	80.1	45.2	125.9604	14.48	43.54	73.7	0.0703	0.838	8.702
Winter	45.0	41.0	71.6	31.6352	12.81	15.69	36.4	0.0784	0.215	2.469
Inside	71.6	59.8	50.0	57.8258	13.57	26.21	52.0	0.0743	0.391	4.263

Where;

DB : Dry Bulb Temperature in deg F  
 WB : Wet Bulb Temperature in deg F  
 RH : Relative Humidity in %  
 W : Humidity Ration in grains/lb  
 V : Specific Volume in ft<sup>3</sup>/lb  
 h : Enthalpy in Btu/lb  
 DP : Dew Point Temperature in deg F  
 D : Density in lb/ft<sup>3</sup>  
 vp : Vapour Pressure in Inch of Hg  
 AW : Absolute Humidity in grains/ft<sup>3</sup>



- ❖ Customer/ consultant approval on all the technical data sheets/ drawings/ documents for this package will be obtained during the detailed engineering stage.

#### A. LIST OF MAKES

S. N.	Description	Makes
1.	Package AC	Voltas / Blue Star / Carrier
2.	Split Air Conditioner	Voltas / Blue Star / Carrier / Hitachi
3.	Air Handling Units	Voltas / Blue Star / Carrier-Aircon / Zeco / Carryaire(Flakt) / Ethos / Saiver Suvidha / Edge Tech
4.	AHU Fan (Centrifugal Fan)	CB.Doctor / Flakt / Nicotra / Comefri / Krugger /Humidin
5.	Cooling Coil for AHU	Voltas / Blue Star / Carrier-Aircon / Jaypee / Zeco / Carryaire(Flakt) / Ethos / Saiver Suvidha / Edge Tech
6.	Induction Motors (LT)	Siemens / ABB / Kirloskar / CGL/KEC/Marathon
7.	Cooling Tower	Paharpur / Mihir
8.	Air Filters	John Fowler /Spectrum
9.	Axial Fans/F.A. Fans	Marathon / Flakt / C Doctor / Humidin/ Krugger
10.	Insulation Material	Lloyds UP Twiga
11.	Balancing Valve	Advance
12.	Butterfly Valve	Audco / Fouress / Inter Valve / Keystone / BDK
13.	Non Return Valves	Fluid line//Hi-tech Valves/ Cresent/Leader/AV Valves /H.Sarkar
14.	Gate/Globe Valves	Cresent/Leader/AV Valves/Kirloskar/ Fouress /H.Sarkar
15.	Gate/Globe Valves (forged Steel/Cast Steel)	Cresent/Leader/AV Valves/BDK/Audco
16.	Relief/Purge Valve	Brassomatic
17.	Piping	Tata / Jindal / SAIL/BST.
18.	GI Sheets for Ducting	SAIL / Jindal/Bhushan / TATA.
19.	Thermostats	Honeywell / RANCO / Penn / Danfoss / Indfoss
20.	Humidistat	Honeywell / Penn.
21.	Antifreeze thermostat	RANCO / Honeywell / Penn / Danfoss / Indfoss
22.	Strip Heaters	Escorts / RACOLD / Daspass/ALCO/HEATCO/Hotset
23.	Pressure Gauges	A.N.INST/ GENERAL INST CONSORTIUM/ GLUCK/H.GURU IND/H.GURU INST/ WAAREE INSTRUMENTS
24.	Temperature Gauges	A.N.INST/ INSTWAAREE INSTRUMENTS

25.	Level Gauge	Levcon / General Instruments/ Chemtrols /SBEM, Pune/V, Automat Mumbai
26.	Pressure Switches	Switzer / Indfoss
27.	DP Switches	SWITZER
28.	Temperature Switch	SWITZER
29.	Flow Element	MICROPRECISION /STAR-MECH
30.	Temperature Element	GENERAL INST CONSORTIUM/ PYRO ELECTRIC WAAREE INST
31.	Transmitters	FISHER-ROSEMOUNT/SIEMENS/TATA HONEYWELL
32.	Sight Flow Indicators	BLISS ANAND/ CHEMTROLS
33.	Rotameter	CHEMTROLS SAMIL/EUREKA IND
34.	Level Switch	BLISS ANAND / CHEMTROLS / Levcon / V. AUTOMATE
35.	Pan Humidifier	Rapid Cool / Hotset/ALCO
36.	Fire Damper	TSC /Carryaire/ Ravistar.
37.	3-Way Mixing Valve with actuating motor	Siemens Building Technology / Honeywell / Johnson
38.	Y-Strainers	Multitex / Greaves Cotton / Grand Prix / Jaypee / SANT
39.	Flow Meter	INSTRUMENTATION ENGINEERS PVT LTD. / EUREKA
40.	Control Panel	Industrial Control & Appliance / Control & Switchgear / Pyrotech / Positronics /Rittal
41.	Annunciator for Panels	Procon/ Pyrotech
42.	Pot Strainer	Multitex / Greaves Cotton / Otoklin / Grand Prix / Jaypee / SANT.
43.	Temp/RH Sensor	Siemens Building Technology/Johnson/ Honeywell
44.	Motorized Butterfly Valve with single phase actuator	Siemens Building Technology/Johnson/Honeywell
45.	Water Softening Plant	Thermax, Ion Exchange , Dosi Ion
46.	Axial Flows Fans	Marathon / Flakt / CB Doctor/ Hyderabad Pollution/ SK System / Advance Ventilation / Patel Air Flow / Kruger / Nicotra