एन एच पी सी लिमिटेड
NHPC LIMITED
(भारत सरकार का उद्धम)
(A GOVT. OF INDIA ENTERPRISE)

तीस्ता-V पावर स्टेशन
Teesta-V Power Station, Balutar

प्रस्ताव हेतु अनुरोध (आरएफपी)

REQUEST FOR PROPOSAL (RFP)

कार्य का नाम: दो वर्ष की अवधि के लिए पावर हाउस में स्थापित चिलर यूनिट संख्या 2 (एक) और पैकेज्ड एसी (2) के व्यापक वार्षिक रखरखाव अनुबंध (सीएएमसी) के लिए तकनीकी और वाणिज्यिक प्रस्ताव का अनुरोध।

Name of work: Request for technical and commercial proposal for "Comprehensive Annual Maintenance Contract (CAMC) of Chiller Unit No:2 (one no.) and Packaged ACs (2 Nos.) installed in Power House for a period of Two Years".

एनएचपीसीलिमिटेड
NHPC LIMITED
(भारत सरकार का उद्यम)
(A Govt. of India Enterprise)
तीस्ता v पावर स्टेशन
Teesta V Power Station
सिंगतम, पूर्वीसिक्किम- 737134
Singtam, East Sikkim- 737134.

IS/ISO 9001 IS/ISO 14001 IS 18001
आई एम एस प्रमाणित पावरस्टेशन
IMS certified Power Station
दूरभाष/Ph: 03592-247349
फ़ैक्स/Fax: 03592-247227/349
Email: teestav-contract@nhpc.nic.in
CIN No. L40101HR1975GOI032564

NH/TSV/Cont/MC-160/NIT-1030/2025-26/135 **Dated: 03/07/2025**

प्रस्ताव हेतु अनुरोध (आरएफपी)/REQUEST FOR PROPOSAL (RFP)

1. "दो वर्ष की अवधि के लिए पावर हाउस में स्थापित चिलर यूनिट संख्या 2 (एक) और पैकेज्ड एसी (2) के व्यापक वार्षिक रखरखाव अनुबंध (सीएएमसी)" के कार्य के लिए पात्र एकल बोलीदाताओं से तकनीकी और वाणिज्यिक प्रस्ताव (आरएफपी) के लिए ऑनलाइन अनुरोध।

Online Request for technical and commercial proposal (RFP) from eligible **Sole Bidders** for the work of **"Comprehensive Annual Maintenance Contract (CAMC) of Chiller Unit No:2 (one no.) and Packaged ACs (2 Nos.) installed in Power House for a period of Two Years."**

A. निविदा का संक्षिप्त विवरण (Brief details of the tender):		
Sl. No.	**Item**	**Description**
i)	Mode of tendering	Custom Bid Service **via GeM Portal**
		Cover-I: Online Techno-Commercial Bid and price bid
ii)	GeM Bid No.	**GEM/2025/B/6404404**
iii)	Tender reference No.	**NH/TSV/Cont/MC-160/NIT-1030/2025-26/135 Dated: 03/07/2025**
iv)	Period of Bid Validity	**Bid validity will be as per GeM Portal**
v)	Tender inviting Authority	**Dy. General Manager (Civil)** **Contract Division, Teesta-V Power Station, Balutar,** **Singtam, Distt : East Sikkim-737134** **E-mail: teestav-contract@nhpc.nic.in**
B. Critical dates of tender: As per GeM Bid No. GEM/2025/B/6404404		

2. Complete Bid Document /Tender Document can be viewed and down loaded from GeM Portal (URL: https://gem.gov.in). The site can also be viewed through e-procurement corner of NHPC website **www.nhpcindia.com**. Any Bidder who wishes to quote for this Tender can download the Tender Document from aforesaid portal after online Bidder enrollment on the e-Procurement module of the GeM Portal (URL: https://gem.gov.in) for e-tendering.

3 **COURT OF COMPETENT JURISDICTION**: Any legal action taken or proceeding initiated on any of the terms of the contract shall be only in the jurisdiction of Hon'ble High Court of Sikkim.

4 Disclaimers

This RFP is neither an agreement and nor an offer by NHPC to the prospective Bidders or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in submitting their proposals pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived in relation to the Project. This RFP document and any assumptions, assessments and statements made herein do not purport to contain all the information that each Bidder may require. The Bidder shall bear all its costs associated with or relating to the preparation and submission of proposal pursuant to this RFP. Where necessary, NHPC reserves the right to amend or supplement the information, assessment or assumptions contained in this RFP. NHPC also reserves the right to withdraw the RFP or foreclose the procurement case at any stage. The issuance of this RFP does not imply that NHPC is bound to shortlist a Bidder for the Project. NHPC also reserves the right to disqualify any Bidder should it be so necessary at any stage on grounds of National Security.

Requisite details in this regard are attached herewith as under for proposal:

(i) Detail of Site Location.
(ii) Scope of work.
(iii) Technical Data Sheet.
(iv) Tentative Special Conditions
(v) Technical & Commercial Offer

(i) **DETAIL OF SITE LOCATION:**

NHPC Ltd (A Govt. of India Navratna Enterprise), Teesta-V PS desires to construct a Prefab structure for Kendriya Vidyalaya at Teetsa-V Power Station, Balutar.

Teesta-V PS (510MW) is located in Gangtok District of Sikkim. The project envisages harnessing of Teesta water, between Dikchu and Sirwani. The site location (proposed prefab KV school) is in Left Bank side, Balutar. Proper approach road is available with adequate of space available for unloading of materials for the structure.

Nearest Railway Station: - Siliguri, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Airport: - Bagdogra, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Bus Stop: - Singtam, approximately 06 Kms from Teesta-V PS, Balutar.

(ii) SCOPE OF WORK :

Name of Work: Protective Ceramic Coating on Spiral Casing, Stay Vanes and Turbine Top Cover of 3 nos Generating Units (Unit-1, 2,3) of Teesta-V Power Station for Teesta V Power Station.

Scope of work/Technical Specifications

Name of Work: Comprehensive Annual Maintenance Contract (CAMC) of Chiller Unit-2 (one no.) & 2 Nos. of Packaged ACs installed in Power House for a period of Two Years.

Technical Specifications of Chiller Unit:

Make: York
Model: YKCFCGQ75COF
Capacity: 600TR
Type of Compressor: Centrifugal
(Technical Sheet is enclosed)

SCOPE OF WORK

Firm will provide competent manpower as detailed in this offer, to carry out the following maintenance visits of chillers only.

A. MINOR MAINTENANCE/PREVENTIVE MAITENANCE

Firm will carry out Six (6) preventive maintenance services (Once in a quarter).

The following inspection items to ensure the unit is operating reliably and efficiently throughout the cooling season.

a) Inspecting the chillers and adjusting safety controls.
b) Checking operation of controls.
c) Checking oil and refrigerant levels.
d) Checking operation of lube system.
e) Checking the oil return system.
f) Checking operation of motor and starter.
g) Recording operating conditions.
h) Checking log and reviewing chillers and system operation.
i) Logging and reporting of repairs and parts those are required.
j) Complete service inspection report forms duly filled.
k) Check oil heater operation.
l) Check three-phase voltage and current balance.
m) Carry out leak test of the system.

B. MAJOR MAINTENANCE:

Firm will carry out Two (2) Major maintenance Services in two years (Once in a Year) as indicated below.

1. Laboratory Analysis of Compressor Oil:

Chemical analysis for assessing internal mechanical condition of equipment to detect presence of rust, dirt, harmful acids, corrosion causing water, other corrosive materials and metal particles.

2. Motor insulation Testing:

Identification of insulation deterioration before motor failure and associated downtime occurrence, permitting cost effective and planned repair.

3. Leakage Testing of Refrigerant Circuit & Repair:

Identifies refrigerant leakage in circuit and avoid loss of refrigerant and breakdown of chiller.

4. Checking the Compressor Oil System for the following items:

a) Changing the compressor oil, if required (Oil to be provided by service provider).
b) Changing oil filter and drier, if required (Oil filter to be provided by service provider).
c) Checking of oil heater.
d) Checking of all other oil system components and strainer where applicable.

5. Checking of VSD starter and performing the following tasks:

a) Running diagnostic check.
b) Cleaning of VSD panel.
c) Checking of tightness of all the connections.
d) Checking VSD cooling system.
e) Checking of coolant and replacement if required. (Coolant will provided by service provider)
f) Meggering of the motor (In case of long shutdown for more than 45 days).
g) Checking FLA settings.

6. Checking of control panel for the following items:

a) Running diagnostic check of motor control panel.
b) Checking safety shutdowns operation.
c) Checking all terminals and tightening connections.
d) Checking display data accuracy and set points.

7. Checking condenser for the following items:

a) Checking the water pressure drop.
b) Checking flow switch operation.
c) Cleaning of Condenser tubes. (Chemical shall be provided by service provider).

8. Checking the cooler for the following items:

a) Checking the water pressure drop.
b) Checking flow switch operation.
c) Checking the refrigerant level.
d) Brushing of evaporator tubes if required.

9. Checking of the system for the following items:

a) Conducting a leakage test and identifying leakage sources. (Consumables like nitrogen will be provided by the service provider)
b) Recording the condition of sight glasses.
c) Checking the refrigerant cycle to verify the proper operating balance.
d) Checking condenser water and chilled water heat transfer.

10. General items included:

a) Cleaning of equipment and surrounding area upon completion of work.
b) Consulting with the operator.
c) Reporting deficiencies and repairs required.
d) Complete service inspection Report Form.

e) All electronic cards repairing and replacement.

C) BREAKDOWNS CALLS

Firm shall attend the breakdown calls as and when required.

1) Firm shall attend all breakdown calls as and when required. Response Time: 4-5 Days.
2) **Downtime** for **minor complaints** such as replacement of Thermister, Transducer, Micro Board , Display board, Input/output board, Transformer, Contactor kit, Contactor, Leakage in Chiller: **14-15 Days**
3) **Downtime** for **major complaints** such as Motor burn out, Compressor Mechanical Failure: 44-45 Days

D) SPECIALLY EXCLUDED

a) Compressor motor as a whole, compressor, control panel as a whole, compressor body.
b) Any internal spares of Centrifugal Compressor.
c) Repairs or maintenance of any equipment not mentioned in this agreement.
d) Chilled water and condenser water treatment.
e) Supply/Repair/Replacement of Air Circuit Breakers/LT panels.
f) Supply/Replacement of Pet Cocks, Syphon, Water line pressure gauges, temperature gauges.
g) Supply/Replacement of Water line valves.
h) Painting of equipments.
i) Any kind of wear and tear caused due to atmospheric conditions, corrosion, chemical pollution or rusting, pitting of the plant.
j) Any modification of the plant.
k) Replacement of components as a whole like cooler, compressor, condenser/condenser coil, pumps, water pipe line, ducting etc.
l) Any kind of repairs/replacement of electrical power supply, mechanical insulation of chiller, piping, ducting, false ceiling and any other kind of civil/masonry work.
m) Any kind of statutory levies/duties imposed during the period will be borne by the customer/user.
n) Any rigging of equipments.

E. SPECIALLY INCLUSIONS

a) Spare parts of Chiller Display Panel.
b) Spare parts of micro-board, relay board.
c) Chiller parts- Transducer, Sensor, Solenoid.
d) Compressor bearings.
e) De-scaling chemicals.
f) Oil filters, driers.
g) Compressor oil.
h) Nitrogen & Coolant.
i) Rewinding of motor if required.
j) Compressor overhauling.
K) Chiller VSD panel.
l) Refrigerant (chargeable to customer/user)

Technical Specifications of Packaged ACs:

Make: Bluestar
Model: DPW1983S
Capacity: 16.5TR (each)
Type of Compressor: Scroll
(Technical Sheet is enclosed)

SCOPE OF WORK

Firm will provide competent manpower as detailed in this offer, to carry out the following maintenance visits of chillers only.

A. MINOR MAINTENANCE/PREVENTIVE MAITENANCE

Firm will carry out Six (6) preventive maintenance services (Once in a quarter).

The following inspection items to ensure the unit is operating reliably and efficiently throughout the cooling season.

a) Inspecting the packaged ACs and adjusting safety controls.
b) Checking operation of controls.
c) Checking refrigerant pressures.
d) Checking operation of the compressors and blowers.
e) Recording operating conditions.
f) Checking and reviewing Log Books of packaged ACs and system operation.
g) Logging and reporting of repairs and parts those are required.
h) Complete service inspection report forms duly filled.
i) Check condenser water inlet/outlet parameters.
j) Check three-phase voltage and current balance.
k) Carry out leak test of the system.
l) Checking operation of motor and starter for blower and correction as required.

B. MAJOR MAINTENANCE:

Firm will carry out Two (2) Major maintenance Services in two years (Once in a Year) as indicated below.

1. Maintenance of Compressor & Evaporator:

Leakage Test of Evaporator, checking of the compressors, pressure testing, cleaning & replacement of air filters if required. Cleaning of the Evaporator with chemical.

2. Motor insulation Testing:

Identification of insulation deterioration before motor failure and associated downtime occurrence, permitting cost effective and planned repair.

3. Checking of Blower for following items:

a) Checking condition of drive belts and replacement if required.

b) Checking condition of Blower and replacement if required.

c) Checking motor-blower alignment and correction as required.

d) Checking condition bearings and replacement if required.

4.Checking Condenser for following items

a) Checking the water pressure drop.

b) Checking flow switch operation.

c) Cleaning of condenser tubes (Chemical shall be provided by the Firm)

5. Checking of control panel for the following items:

a) Running diagnostic check of motor control panel.
b) Checking safety shutdowns operation.
c) Checking all terminals and tightening connections.
d) Checking display data accuracy and set points.

6. Checking of the system for the following items:

a) Conducting a leakage test and identifying leakage sources. (Consumables like nitrogen will be provided by the service provider)
b) Checking functioning of electronic cards, MCBs, Contactors, Fuses etc. and replacement as per requirement.
c) Checking the refrigerant cycle to verify the proper operating balance.
d) Checking condenser water and chilled water heat transfer.

7. General items included:

a) Cleaning of equipment and surrounding area upon completion of work.
b) Consulting with the operator.
c) Reporting deficiencies and repairs required.
d) Complete service inspection Report Form.
e) All electronic cards, remote, relays, contactors, MCCBs, fuses etc. repairing and replacement.

C) BREAKDOWNS CALLS

Firm shall attend the breakdown calls as and when required.

4) Firm shall attend all breakdown calls as and when required. Response Time: 4-5 Days.
5) **Downtime** for **minor complaints** such as replacement of Thermistor, electronic cards, remote, relays, contactors, Transformer, Contactor kit, Contactor, Leakage in Condenser/Evaporator: **14-15 Days**
6) **Downtime** for **major complaints** such as Motor burn out, Compressor Mechanical Failure: 40-45 Days

D) SPECIALLY EXCLUDED

a) Compressor motor as a whole, compressor, control panel as a whole, compressor body.
b) Repairs or maintenance of any equipment not mentioned in this agreement.
c) Chilled water and condenser water treatment.
d) Supply/Repair/Replacement of Air Circuit Breakers/LT panels.
e) Supply/Replacement of Water line pressure gauges, temperature gauges.
f) Supply/Replacement of Water line valves.
g) Painting of equipments.
h) Any kind of wear and tear caused due to atmospheric conditions, corrosion, chemical pollution or rusting, pitting of the plant.
i) Any modification of the plant.

j) Replacement of components as a whole like compressor, condenser/condenser coil, pumps, water pipe line, ducting etc.
k) Any kind of repairs/replacement of electrical power supply, mechanical insulation, piping, ducting, false ceiling and any other kind of civil/masonry work.
l) Any kind of statutory levies/duties imposed during the period will be borne by the customer/user.
m) Any rigging of equipments.

E. SPECIALLY INCLUSIONS

a) Remote Control.
b) Spare parts of Control Board
c) Transducer, Sensor, Solenoid.
d) Scroll Compressor bearings.
e) Air filters.
f) Nitrogen Gas.
g) Rewinding of motor if required.
h) Compressor overhauling (Compressor will be provided by Power Station).
i) Refrigerant (chargeable to Power Station)

(iii) TECHNICAL DATA SHEET:

Name of Work: Comprehensive Annual Maintenance Contract (CAMC) of Chiller Unit No:2 (one no.) and Packaged ACs (2 Nos.) installed in Power House for a period of Two Years.

TECHNICAL DATA SHEET OF CHILLING UNIT

TECHNICAL DATA SHEET FOR CHILLING UNIT

S No.	Description	Unit	Details
A	GENERAL		
1]	Make of Chiller/Model		YORK/YKCFCGQ75COF
2]	Source of Chiler		USA
3]	Capacity of Chiller	TR	600
4]	Type of Compressor		Centrifugal
5]	Compressor		Open Drip proof
6]	Motor		WP1 with winding thermister and space heater
7]	Refrigerant		R - 134a
7 a]	Chemical Formula		CH2FCF3
7 b]	Chemical Name		1,1,1,2-tetrafluoroethane
8]	Power characteristics	Volts/Ph/Hz	415+/- 10 % / 3 / 50
9]	Motor Power	Kw	380
10]	Type of Starter		Variable Speed Drive
11]	Inrush Current	Amps	630
12]	Motor Full load current	Amps	616
13]	Operating weight	Kgs	11675
14]	Refrigerant required	Kgs	726
B	COOLER		
1]	Entering water temperature	Deg F	55
2]	Leaving water temperature	Deg F	45
3]	Water Flow Rate	USGPM	1440
4]	Pressure Drop	Ft	21.8
5]	Fouling Factor	Sqft Deg F Hr / Btu	0.0001
6]	Pass		2
C	CONDENSER		
1]	Entering water temperature	Deg F	90
2]	Leaving water temperature	Deg F	97.48
3]	Water Flow Rate	USGPM	2250
4]	Pressure Drop	Ft	26.3
5]	Pass		2.0
6]	Fouling Factor	Sqft Deg F Hr / Btu	0.00025

Note : Chillers are rated as per ARI-550-98 latest standard.

TECHNICAL DATA SHEET OF PACKAGED AC

:HNICAL DATA FOR 'DPW' PACKAGED AIR-CONDITIONERS (WATER COOLED)

DESCRIPTION	UNITS	MODEL :DPW1983S
NOMINAL COOLING CAPACITY	TR	16.5
NOMINAL EVAPORATOR AIR QUANTITY	cu.m/hr.	11220
AIR FLOW	CFM	6600
NET WEIGHT	kg.	605
SHIPPING WEIGHT (APPROX.)	kg.	620
CONNECTIONS :		
CONDENSATE DRAIN SIZE	mm	31.7 BSP
CONDENSER WATER INLET SIZE	mm	31.7 BSP
CONDENSER WATER OUTLET SIZE	mm	31.7 BSP
ELECTRICAL POWER SUPPLY :		
(A) POWER SUPPLY		415+/- 10% V , 3 PH. , 50HZ , AC SUPPLY
(B) CIRCUIT CURRENT CAPACITY	A	40
(C) DISCONNECT FUSE SWITCH	A	64
(D) CONNECTOR : POWER		CST 25
INTERLOCK		CST 2.5
OVERALL DIMENSIONS		
(A) WIDTH	mm	1500
(B) DEPTH	mm	750
(C) HEIGHT	mm	1800
COMPRESSOR		
(A) QUANTITY	No.	3
(B) TYPE		SCROLL
(C) MAKE		COPELAND
(D) MODEL		ZR72- KC
(E) POWER INPUT	KW	5.25
(F) OPERATING SPEED	RPM	2900
(G) DISPLACEMENT	Cu.m/hr.	17.05
(H) MOTOR PROTECTION		INTERNAL
(I) TYPE OF LUBRICATION		FORCE FEED
(J) OIL CHARGE/COMPRESSOR	Litres	1.77
(K) POWER SUPPLY		415V +/- 10% , 3 PH. , 50HZ , AC SUPPLY
(L) OPERATING VOLTAGE RANGE	V	----------342-462----------
(M) MOUNTING ARRANGEMENT		4 NOS. RUBBER GROMMETS WITH METAL SLEEVES
(N) WEIGHT OF EACH COMPRESSOR	Kg.	38.1
BLOWER		
(A) TYPE		CENTRIFUGAL FORWARD CURVE , DOUBLE INLET
(B) SIZE (NOMINAL DIA. x LENGTH)	mm	381 X 381
(C) QUANTITY	No.	1
(D) SPEED	RPM	978
(E) STEEL SHAFT DIA. x LENGTH	mm	25.4 x 635
(F) BEARINGS	No.	2

CHNICAL DATA FOR 'DPW' PACKAGED AIR-CONDITIONERS (WATER COOLED)

DESCRIPTION	UNITS	MODEL :DPW1983S
G. BELT SIZE		A-28
H. NUMBER OF BELTS	No.s	2
MOTOR PULLEY SIZE	MM	138
BLOWER PULLEY SIZE	MM	95
MOTOR FOR BLOWER		
(A) MAKE		HINDUSTAN or EQUIVALENT
(B) TYPE		TOTALLY ENCLOSED , FOOT MOUNTED
(C) QUANTITY	No.	1
(D) POWER SUPPLY		415V +/- 10% , 3 PH. , 50HZ , AC SUPPLY
(E) FRAME SIZE		100L
(F) SPEED		1440
(G) POWER OUTPUT	KW	2.25
(H) RATED CURRENT	A	4.6
(I) SHAFT DIAMETER	mm	28
(J) CLASS OF INSULATION		F CLASS
EVAPORATOR		
(A) FACE AREA	Sq. Mt.	1.24
(B) TUBE MATERIAL		COPPER
(C) OD x THICKNESS	mm x mm	9.5 x 0.345
(D) TOTAL TUBE OUTER SURFACE AREA	Sq. m.	4.39
(E) TOTAL TUBE INNER SURFACE AREA	Sq. m.	7.6386
(F) TYPE OF FIN		SLITTED
(G) FIN MATERIAL		ALUMINIUM 99 % , ' 0' TEMPER (As per IS - 19000)
(H) FPI		10
(I) ROWS DEEP	No.	3
(J) TOTAL FIN AREA (CORRUGATED)	Sq. m.	64.6
(K) NO. OF CIRCUITS	No.	27
EXPANSION VALVE		
(A) TYPE		TXV WITH EXTERNAL EQUALIZER
(B) MAKE		DANFOSS /SPORLAN/ALCO
(C) MODEL		TUBE 9 / SVE 5/AAE 5
(D) QUANTITY	No.	3
(E) CAPILLARY LENGTH	m.	1.5
(F) INLET SIZE,ODF SOLDER	mm	9.5
(G) OUTLET SIZE ODF SOLDER	mm	12.7
DISTRIBUTOR		
(A) MAKE		BLUE STAR
(B) QUANTITY	No.	3
(C) HOLES	No.	6
(D) TUBING SIZE	mm	6.3
(E) INLET SIZE ODF	mm	6.3
SUCTION LINE		
OD x THICKNESS	mm x mm	22.2 X0.9
DISCHARGE LINE		

CHNICAL DATA FOR 'DPW' PACKAGED AIR-CONDITIONERS (WATER COOLED)

DESCRIPTION	UNITS	MODEL :DPW1983S
OD x THICKNESS	mm x mm	12.7 x 0.7
LIQUID LINE		
OD x THICKNESS	mm x mm	9.5 x 0.7
FILTER DRIER		
(A) TYPE		DN 83/UDK083/083
(B) MAKE		DANFOSS/ALCO/SPORLAN
(C) QUANTITY	No.	3
(D) SIZE OF SAE FLARE CONNECTION	mm	10 SAE
SERVICE VALVE 1/4" SAE FLARE		
(A) QUANTITY	No.	6
AIR FILTER		
(A) MATERIAL		NON WOVEN POLYESTER MEDIA ENCLOSED BY HDPE MESH
(B) SIZE	mm	457 X 933
(C) QUANTITY	No.	3
(D)METHOD OF CLEANING		WASHING
(E)MAXIMUM PR. DROP AT FLOW RATE	mm	3.5
(F) PARTICLES FILTERED DOWN TO		20 MICRONS
CONDENSER		
(A) QUANTIY	No.	1
(B) QUANTITY OF SHELLS/CONDENSER	No.	3
(C) TYPE		SHELL AND TUBE
(D) SHELL NB	mm	203
(E) SHELL OD	mm	219
(F) THICKNESS	mm	6.35/ 7.04
(G) MATERIAL		MILD STEEL (As per IS 1239, Class C)
(H) NO. OF TUBES	No.	46
(I) NO. OF PASSES	No.	6
(J) TUBE SIZE: ODxTHICKNESS(UN FINNED)	mm x mm	19 X1.397
(K) INTEGRAL FPI		26
(L) TOTAL OUTER SURFACE AREA	Sq. m.	10.3
(M) TOTAL INNER SURFACE AREA	Sq. m.	2.4
(N) WATER INLET AND OUTLET SIZE	mm	31.7 BSP
(O) HOT GAS INLET SIZE, OD x THK.	mm x mm	12.7 x 0.7
(P) LIQUID OUTLET SIZE, OD x THK.	mm x mm	9.5 x 0.7
(Q) FUSIBLE PLUG SIZE	mm	9.5
(R) MELTING TEMP. OF FUSIBLE PLUG	Deg. C	91
(S) DRAIN AND VENT SIZE	mm	6.3
(T) COOLING WATER QUANTIY	USGPM	60
(U) WATER VELOCITY IN TUBES	FPS	7.83
(V) FOULING FACTOR	Sq.ft.hr.deg.-F / BTU	0.0005
(W) PRESSURE DROP	PSIG	10

INICAL DATA FOR 'DPW' PACKAGED AIR-CONDITIONERS (WATER COOLED)

DESCRIPTION	UNITS	MODEL :DPW1983S
A)FOR COMPRESSOR		
i)CONTACTOR		3
QTY		L&T/SIEMENS
MAKE		MN 12/3TF 32
TYPE	AMPS	12
RATING		
B) FOR BLOWER FAN MOTOR		
i) CONTACTOR		1
QTY		L&T/SIEMENS
MAKE		MN 9/3TF30
TYPE	AMPS	9
RATING		
ii) OVERLOAD RELAY		1
QTY		L&T/SIEMENS
MAKE		MN 2/3UW50021G
TYPE	AMPS	4.5 to 7.5/4 to 6.3
RANGE		
(C) THERMOSTAT		
(i) MAKE		NATIONAL / SIEBE ELECTROMECHANICAL, BELLOW TYPE
(ii) TYPE	Deg. C	16.5 ± 2 TO 28 ± 2.5
(iii) RANGE	Deg. C	COLD 2.5 ± 1 , WARM 2 ± 1.5
(iv) DIFFERENTIAL	V	240
(v) VOLTAGE	A	20
(vi) FLA		
(D) HIGH / LOW PRESSURE CUT OUT		SAGINOMIYA
(i) MAKE		Fixed pressure setting
(ii) TYPE		LCB- DA 80
iii) MODEL LP Switch		ACB- DB162
MODEL HP Switch		3
(iii) QUANTITY	PSIG	35 / 290
LP SETTING/ HP SETTING	PSIG	15 /60
(vi) DIFFERENTIAL LP /HP	mm	6.3 (1/4")
(vii) CONNECTION	Amps	4
(viii) ELECTRICAL RATING		
(E) RESET RELAY		CONTROL RELAY
TYPE	No.	3
QUANTITY		PLA or EQUIVALENT
MAKE		6A /230 V
RATING		6A /230 V
RATING		
INSULATION		12 mm FIBRE GLASS BONDED BY NON WATER SOLUBLE
MATERIAL		FIRE RETARDENT THERMOSETTING RESIN
REFRIGERANT R -22 CHARGE	Kg.	9.6

ECHNICAL DATA FOR 'DPW' PACKAGED AIR-CONDITIONERS (WATER COOLED)

DESCRIPTION	UNITS	MODEL :DPW1983S
MAXIMUM DELIVERY HEAD PRESSURE	PSIG	280 [IN RUNNING CONDITION]
MAXIMUM NOISE LVL AT 1 M	dB [A]	65
CONDENSER WATER INLET TEMPERATURE	Deg F	90
CONDENSER WATER OUTLET TEMPERATTURE	Deg F	97.5
BUILT IN AIR DAMPER		NO
NO. OF ELECTRICAL HEATING STAGES		2
REFRIGERANT R -22 CHARGE	Kg.	9.6

Control panel features

1.Run time equalization of compressors
2. Single phase/Reverse phase protection
3. Compressor start delay timer
4.Emergency manual mode
5.Temperature setting(19 Deg.C to 32 Deg.C)
6. Fuzzy logic
7.Memory backup
8.Auto restart

(iv) Special Terms & Conditions

Name of work: Comprehensive Annual Maintenance Contract (CAMC) of Chiller Unit No:2 (one no.) and Packaged ACs (2 Nos.) installed in Power House for a period of Two Years.

1. **Completion Period:**02 years from the date of commencement of the work.

2. **Payment Terms:** The payment shall be made on quarterly basis at the end of each quarter on completion of job and submission of invoice with signed service report duly endorsed by EIC. Payment shall be released through electronic fund transfer. Bank charges if any shall be borne by the contractor. Payment shall be made in INR.
3. Quantity of the refrigerant mentioned in the Scheduled of Quantity & Prices is the estimated quantity only.Rates of refrigerant gas shall be paid on actual basis on the awarded prices.
4. **Paying Authority:** Dy. General Manager(Finance), Finance Division, Teesta – V Power Station, Balutar, Singtam, East Sikkim
5. **Liquidated damages (L.D):**Liquidated damage shall be applied on the basis of following parameters/conditions related to breakdown of equipment:

   a) Firm shall attend all break down calls and restore the chiller unit within twenty (20) days (including response time) on getting written information from Engineer-in-Charge (EIC) or his representative for minor breakdown (such as replacement of electronic cards, minor spares, leakage rectifications etc.)

   b) Firm shall attend all break down calls and restore the chiller unit within fifty (50) days (including response time) on getting written information from Engineer-in-Charge (EIC) or his representative for major breakdown (such as repair of motor, compressor etc.)

   If the firm can't complete such work, as mentioned above, within the stipulated time, the contractor shall be liable to pay @0.035% of the contract sum of per day or part thereof for the period of delay as per a & b above subject to maximum 10% of the value of the contract sum.

6. **Security Deposit:** The firm should submit performance security deposit @5% of ordered value within 30 days on shape of demand draft in favour of "NHPC LTD" payable at Singtam, East Sikkim. In case of default and non fulfillment of said terms and condition by the firm, then @5% of contract sum shall be deducted from 1st RA bill as performance security deposit.

7. **Accommodation:** Suitable accommodation shall be provided free of cost to the service engineers at site subject to availability. In case accommodation cannot be provided due to any reason the firm has to make own arrangement.
8. **Defect Liability Period:** Chiller unit shall be handed over to the contractor in healthy/working condition. During currency of the contract, contractor shall be responsible for maintaining of chiller unit in healthy condition. Defect liability period shall be completed after completion of contract period.

(v) Technical & Commercial Offer:

Comprehensive Annual Maintenance Contract (CAMC) of Chiller Unit No:2 (one no.) and Packaged ACs (2 Nos.) installed in Power House for a period of Two Years

Sl. No.	Description	Unit	Qty. (Sq. Meter)	Rate (Rs.)	GST @ ……%	Rate (₹) with ……% GST	Final Rate (₹)	Amount (₹)
1	Comprehensive Annual Maintenance Contract (CAMC) of Chiller Unit #-II (1 no) of Teesta-V Power House for the period of 2 (two) years.	Job	1					
2	Comprehensive Annual Maintenance Contract (CAMC) of Packaged ACs # II&III (2 nos) of Teesta-V Power House for the period of 2 (two) years	Job	1					
3	Refrigerant Tetrafluroethane (R134a)	Kg	726					
4	Refrigerant Chlorodifluoromethane (R22)	Kg	122					
							Grand Total (Rs.)	

In words:

Notes:- 1) SAC Code of BOQ Items of Contract: ……..

2) Offered Rates (on RFP) should be inclusive of all taxes including applicable GST, transportation charge, local octroi & all other charges and should be quoted in manually on the above table.

(For & on behalf of NHPC Ltd.)

Dy. General Manager (Civil)
Contract Division
Teesta-V Power Station
Email: teestav-contract@nhpc.nic.in

(Seal & Signature of Participated Firm)

BRIEF DESCRIPTION OF THE PROJECT

1. 1.1 ABOUT SIKKIM AND TEESTA RIVER.

Sikkim is a small and beautiful state located in the northeast Himalayas. It is one the youngest state of Indian union. It is surrounded by vast stretches of Tibetan plateau in the north, Chubi valley of Tibet and Kingdom of Bhutan in the east, Darjeeling Gorkha Hill council in the south and kingdom of Nepal in the west.

Due to prevalent cold and moderate climatic conditions with very low ambient dual level, the state presents ideal opportunity for development of high-tech industries like microelectronics and ancillary products which impose less burden on transportation facilities and earn rich dividends. However, for such developmental efforts, abundance of cheap and clean power is vital.

Sikkim is drained by a large number of perennial rivers, the prominent ones being Teesta and Ragit. The Teesta river originates from Zemu glacier and Rangit river from Talung glacier in west Sikkim which, after flowing for about 60kms, joins the Teesta river near the state border with West Bengal.

The elevation of Sikkim ranges from 300 m to 8583 m above mean sea level. It consists of lower, middle & higher hills.

1.2 LOCATION OF THE PROJECT

Nearest Railway Station :- Siliguri, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Airport :- Bagdogra, approximately 110 Kms from Teesta-V PS, Balutar.

Nearest Bus Stop :- Singtam, approximately 06 Kms from Teesta-V PS, Balutar.

1.3 BRIEF DESCRIPTION OF THE PROJECT

Teesta HE project, stage-V is located in South-East Sikkim. The project envisages harnessing of Teesta water, between Dikchu (27º 24’ 00’’ E: 88º 31’30’’N) and Sirwani (27º14’54’’E: 88 29’ 56’’N). The scheme comprise; 95m high Concrete Gravity Dam (located 2 Kms downstream of its confluence with Dikchu nala) 17.106 Km long HRT housed on the left bank, a 95m high, 30m dia Surge Shaft and an underground power house near Sirwani, to generate 510MW of Power, utilizing a gross head of 200m.