

BHEL-PEM-MAUX PRE-QUALIFICATION CRITERIA			
	PROJECT: 1X800 MW HPGCL YAMUNANAGAR STPP-EPC PACKAGE: AIR CONDITIONING SYSTEM PRE-QUALIFICATION REQUIREMENT (TECHNICAL)	PE-PQ-510-553A-A001	
		DATE	30.07.2026
		REV NO.	00

Sl. No.	DESCRIPTION
1.0	Bidder should have designed, supplied, erected and commissioned atleast one (1) number of Air conditioning systems each having a total installed capacity of 300 TR or more, which should have included atleast one chilling unit with a minimum capacity of 60 TR at each reference system in Industrial/Commercial installations. The systems should have been in successful operation for atleast one (1) year prior to the date of techno-commercial bid opening.
2.0	Bidder has to submit following supporting documents meeting above mentioned pre-qualifying requirement Copy of minimum one (1) performance certificate from end user along with copy of related Purchase Order (PO) or Letter of intent (LOI) or Letter of Award (LOA) or Work Order (WO) in support of PQR clause at S.No.1.0 above.
3.0	Sub-supplier Qualification Requirement for chiller: The chiller unit(s) proposed to be supplied for this package shall be sourced from the manufacturer(s) who have manufactured and supplied atleast one (1) no. of similar type of chiller units each having a capacity of not less than 150 TR, which should have been in successful operation for atleast one (1) year prior to the date of techno-commercial bid opening. Bidder has to furnish a confirmation to meet above sub-supplier Qualification Requirement in prescribed format attached in Section II of tender specification. However, required documents (as mentioned against Sr. no. 2 above) for establishing chiller provenness shall be furnished by successful bidder after placement of order.
Notes	
a	BHEL reserves the right to seek approved design documents from bidders to substantiate technical parameters as specified in clause 1 above.
b	Bidder to submit all supporting documents in Hindi and/or English as required. If documents submitted by bidder are in language other than that specified above, a translated copy of the same, in above language(s) shall be submitted by the bidder. In such case, for purposes of interpretation, the translated version shall govern. The translation of the documents shall be carried out by professional translators and the translator shall certify that he is proficient in both languages in order to translate the document and that the translation is complete and accurate. Further, in case the supporting documents are issued outside India, same shall be authenticated by the Indian Consulate located in the Country where the documents have been issued or the Embassy of that Country in India.
c	In case the PO/ LOI /LOA/ WOs is more than ten (10) years old as on date of bid opening, minimum one (1) no. additional Purchase order (for similar jobs) shall be submitted which should not be more than ten (10) years old as on date of bid opening, for establishing continuity in business.
d	Notwithstanding anything stated above, BHEL/End customer/Owner reserves the right for physical assessment of the capabilities and capacity of the bidder to perform the contract, should the circumstances warrant such assessment in the overall interest of BHEL/ End customer/Owner.
e	Consideration of offer shall be subject to End customer/Owner's approval of bidder.

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f	After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all other terms of the tender.
g	Bidder shall meet PQR based on its own credentials. Bid from joint venture (JV) company / Consortium bid is not acceptable.

Prepared By

Checked by

Reviewed By

Approved By

PRICE ADJUSTMENT FOR SUPPLY AND MANDATORY SPARES

- (i) The Contract price shall be subject to price adjustment during performance of the Contract to reflect changes in the cost of material in accordance with the provisions described below
- (ii) The price adjustment provisions shall be applicable separately for price components relating to Supply of Equipment as per price break-up furnished by the Contractor.
- (iii) Only following components of the Contract Price will be subject to Price adjustment:
 - (a) Ex-Works supply price of Plant and Equipment including commissioning spares, Mandatory spares.
- (iv) Price adjustment amounts towards aforesaid components of Contract Price shall be paid in the respective currencies of Contract (INR).
- (v) The indices for price adjustment shall be as elaborated hereunder.
- (vi) The price adjustment formula for the components of the Contract Price, as mentioned at Sl. No. (iii) above, shall be as stipulated hereinafter.
- (vii) Ex-Works Price Component of Plant and Equipment including Mandatory Spares

The amount of price adjustment towards variable portion payable/recoverable on each item shall be computed as under:

Indices to be used for each item shall be as per Economic advisor WPI data for finished goods published at www.eaindustry.nic.in for respective month.

Major list of Indices to be used for HVAC are specified in table A below

Wherever indices of items are not directly specified in WPI data, Indices for the same shall be suitably decided during execution of contract.

EC against each item shall be calculated as per following formula

$$\text{EC} = \frac{(P1 - P0) \times EC0}{P0}$$

Where

EC = Adjustment to Ex-Works supply Price Component expressed in the currency of The Contract (INR) payable/recoverable to the contractor for each shipment/dispatch.

EC0 = Ex-Works supply Price for the plant and equipment in the currency of the Contract (INR), shipment/dispatch wise.

P1 = Refers to indices of the month of reckoning the variated price which shall be the month before the month in which dispatch is made

P0 = Refers to indices of Base Month for PVC which shall be taken as the month before the month of the price bid opening.

The latest available indices are to be extrapolated to the above defined month wrt the base month.

Note:

- 1) The price adjustment i.e. either increase or decrease shall be applicable upto the contractual date of completion of supplies. Contractual delivery/dispatch date would mean the delivery/dispatch date mentioned in the order including amendments in delivery/dispatch date (if any). PVC will not be applicable for the period beyond the contractual delivery/dispatch date where delay is attributable for supplier.
- 2) Though the calculation shall be done for each Billing Break up (BBU) item at the time of dispatch as per formula mentioned above, Total/Net price variation of package shall be calculated and settled at the end of all required supplies of the package and shall be limited to (+) 20% of Total Ex-Works Supply Price including Mandatory spares. There shall be no limit on negative value of PVC.

TABLE A

Chillers
Cooling Towers
Steel pipes, tubes & poles
Cold Rolled (CR) Coils & Sheets, including Narrow Strip
Steel Container
Air Conditioner
Manufacture of plastics products
Centrifugal Pumps
Manufacture of Fabricated Metal Products, Except Machinery and Equipment
Manufacture of other fabricated metal products
Manufacture of lifting and handling equipment
Manufacture of electronic components
Manufacture of measuring, testing, navigating and control equipment
Salt
Manufacture of Water purifier
Manufacture of Electric heaters
Manufacture of steam generators, except central heating hot water boilers
Manufacture of Fan
Hand tools
Processed rubber
Air Coolers
Manufacture of AC motor
GC/GP sheets
Manufacture Of Electrical Equipment
Industrial Valves

PRICE ADJUSTMENT FOR SERVICE PART (E&C)

- (i) The Contract price shall be subject to price adjustment during performance of the Contract to reflect changes in the cost of labour in accordance with the provisions described below:
- (ii) The price adjustment provisions shall be applicable for price components relating to service part (E&C) as per price break-up furnished by the Contractor.
- (iii) Only following components of the Contract Price will be subject to Price adjustment:
 - (a) Service part (E&C) component of Contract Price.
- (vi) The indices for price adjustment shall be as elaborated hereunder.
- (v) The price adjustment formula for the components of the Contract Price, as mentioned at Sl.No. (iii) above shall be as stipulated hereinafter.

a) Indian Rupee Portion of the Installation Services

$$ER = ER1 - ER0$$

ER1 will be computed as follows:

$$ER1 = ER0 (0.15 + Lb \times (L1/ Lo))$$

Where:

- 1. ER = Adjustment to Erection & Commissioning price component of contract price expressed in Indian Rupees payable to the contractor for each billing.
- 2. ER1 = Adjusted amount of Erection & Commissioning price component of contract price expressed in Indian Rupees payable to the Contractor.
- 3. ER0 = Value of the Erection & Commissioning work done in the billing period, which shall be calculated as under:

For the purpose of computing ER0, each Erection & commissioning bill (service part) during the E & C period up to the 'Completion of the Facilities' shall be calculated as described in this document.

- 4. Lb – Coefficient of labour (for all categories) content in the Indian Rupee portion of the erection & commissioning =0.85
- 5. L=Indian field labour index namely, all India consumer price index for industrial workers (All India Monthly Average) as published labour bureau, Shimla, Government of India.

For the indices,

- 5a. Subscript '0' refers to indices of the Base Month which shall be taken as the month before the month of the price bid opening.
- 5b. Subscript '1' refers to indices of the month in which service / E&C is carried as per the Purchase Order or its amendments issued.

The latest available indices are to be extrapolated to the above defined month wrt the base month.

Note:

- 1) The price adjustment i.e. either increase or decrease shall be applicable upto the contractual date of completion of supplies. Contractual delivery/dispatch date would mean the delivery/dispatch date mentioned in the order including amendments in delivery/dispatch date (if any). PVC will not be applicable for the period beyond the contractual delivery/dispatch date where delay is attributable for supplier.
- 2) The price variation shall be limited to +20% of total E&C price (excluding taxes). There shall be no limit on negative PVC.



PRE - QUALIFYING REQUIREMENTS

PROJECT: 1 X 800 MW HPGCL YAMUNANAGAR STPP

PACKAGE: AIR CONDITIONING SYSTEM

CRITERIA FOR EVALUATION - FINANCIAL :

	Amount (in Rs.)
Average annual financial turnover value during last three Financial Years as on tender due date should not be less than	3,07,00,000.00

Rs.Three Crore Seven Lakh only

Notes:-

a) The bidder has to submit Audited Financial accounts comprising of Audit report (if applicable), Balance sheet, Profit & Loss A/c Statement and Notes/Schedules pertaining to Turnover/Sales/Revenue, for last three years (or from the date of incorporation, whichever is less) as on tender due date to review the above criteria. In case the incorporation of vendor is less than 3 years, average annual Financial turnover shall be calculated based on available information as below: -

i) If the accounts are available for ≤ 1 Financial Year, the Average Annual Turnover shall be calculated based on available information divided by 1 (One).

ii) If the accounts are available for >1 but ≤ 2 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 2 (Two).

iii) If the accounts are available for >2 but ≤ 3 Financial Years, the Average Annual Turnover shall be calculated based on available information divided by 3 (Three).

b) Foreign bidder is to submit a latest report from reputed third-party business rating agency like Dun & Bradstreet, Credit reform etc. in addition to the documents mentioned at point (a) above for review of above criteria.

c) Other income shall not be considered for arriving at Annual Turnover/Sales. For evaluation purpose, turnover figure excluding taxes shall be considered.

d) For evaluation of foreign bidder exchange rate (TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid in case of two-part bid) shall be considered.

e) Bidder who is 50% or above subsidiary of any company including those registered outside India and does not meet any of the above Financial criteria, such bidder may be qualified based on credentials of its holding company provided such holding company meets the above PQR criteria. In such case, the bidder would be required to furnish a letter of support from its holding company, pledging unconditional and irrevocable Financial support for the execution of the contract by the bidder in case of award.

f) In cases where audited results for its last Financial year as on the date of Techno-Commercial bid opening are not available, a certificate would be required from CEO/CFO stating the the Financial results of the Company are under audit as on the date of Techno-Commercial bid opening and are not available.

ANNEXURE - I : PRICE BREAKUP FOR SUPPLY PART							
NAME OF PROJECT:			1X800 MW HPGCL YAMUNA NAGAR STPP				
NAME OF PACKAGE:			AC SYSTEM				
TECHNICAL SPECIFICATION No:			PE-TS-510-553-A001				
S.NO.	ITEM DESCRIPTION	QUANTITY	UNIT	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
	BREAK-UP OF ITEMS MENTIONED AT S. NO. 2.2 OF MAIN SHEET						
A	AC-Plant-1: CENTRAL CHILLED WATER SYSTEM FOR MAIN CR AREAS						
1	Water cooled Chilling machine each of minimum 220 TR capacity consisting of (a) Screw refrigerant compressor complete with motors, control panel, multi drive set, controls and interlocks other accessories as specified; (b) Water cooled condenser adequately sized with suitable anti corrosive paint coating for tube and shell part coming in contact with soft water & other accessories and (c) Shell & tube type water chiller & other accessories, as specified as per specification.	2	NO		₹ -	₹	-
2	Sheet metal cabinet type air handling units (double skin as per specification) consisting of chilled water cooling coil, centrifugal blower, TEFC sq cage induction motor, non-return damper, motorised volume control damper, filters (pre filter), 3 way motorised mixing valve with thermostatic controls and other accessories to meet the AC load of the main CR areas at 17.0m . Fine Filters and HEPA Filters for AHUs shall be included in common discharge plenum of AHU as per specification.	3	NO		₹ -	₹	-
3	Sheet metal cabinet type air handling units (double skin as per specification) consisting of chilled water cooling coil, centrifugal blower, TEFC sq cage induction motor, non-return damper, volume control damper, filters (pre filter), 3 way motorised mixing valve with thermostatic controls and other accessories to meet the AC load of the UPS & 24V Battery Charger room at 8.5m and 220V Battery Charger Room at 4.0m . Fine Filters in common discharge plenum of AHUs as per specification.	2	NO		₹ -	₹	-
4	Sheet metal cabinet type air handling units (double skin as per specification) consisting of chilled water cooling coil, centrifugal blower, TEFC sq cage induction motor, non-return damper, volume control damper, filters (pre filter), 3 way motorised mixing valve with thermostatic controls and other accessories to meet the AC load of the CEP VFD Room at 3.5M . Fine Filters in common discharge plenum of AHUs as per specification.	2	NO		₹ -	₹	-
5	Ceiling suspended AHU consisting of chilled water cooling coil, blower, motor, driveset, filters (prefilter), 3-way motorised mixing valve with thermostatic controls, NRD and other accessories to meet the AC load of different areas. High Efficiency Filters (if required) shall be provided at discharge of AHUs as per specification.						
a*	10 TR	2	Nos*		₹ -	₹	-
6	Fibreglass reinforced plastic (FRP) construction cooling towers complete with fan, motor, FRP basin, nozzles, make-up water & quick fill water connection, Instruments, drains, equalising connection, piping, valves, strainers, ladder, structural support & all accessories as specified as per specification.	2	NO		₹ -	₹	-
7	Centrifugal pump sets for condenser water recirculation complete with TEFC motor & all accessories as specified.	2	NO		₹ -	₹	-
8	Centrifugal pump sets for chilled water recirculation complete with TEFC motor set & all accessories, as specified.	2	NO		₹ -	₹	-
9*	MS/FRP Expansion Tank (insulated) spray galvanised from inside for chilled water with all accessories like instruments and valves as required, capacity min. 1 m3 .	1	NO*		₹ -	₹	-
10*	MS/FRP Make up Tank (Tanks shall be MS & inner surface spray galvanised. Make up water line with with all accessories like instruments and valves as required. Capacity of each tank min. 4 m3 .	1	NO*		₹ -	₹	-
11	Condenser water piping with necessary fittings like tee, reducer, expander, elbow, flange, strainer with flange, air vent, all types of valves with flanges, valves including piping from makeup water tank to cooling tower, chiller, condenser water pump, pan humidifiers of each AHU room etc as specified.	1	LOT		₹ -	₹	-
12	Complete Insulated Chilled water piping within AC plant room, AHU rooms and from AC plant room to various AHU rooms, chilled water pump, expansion tank complete necessary fittings like tees, reducers, expanders, elbows, flanges, all types of valves with flanges, strainers with flanges, air vents etc with supports, insulation with finish as per specifications.	1	LOT		₹ -	₹	-
13	Monsoon reheating/ winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc.	1	LOT		₹ -	₹	-
14	PAN type HUMIDIFIER for each AHU room complete with humidistat, geyserstat safety controls, make up water piping from make up tank / nearest source of water, valves fittings etc	1	LOT		₹ -	₹	-
15	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters (pre and fine), modulating dampers, support structure and other accessories etc. as per specification for each AHU room (2x100% configuration for each AHU room) .	1	LOT		₹ -	₹	-
16*	Non Chemical water treatment equipment (Online chemical scale preventer) with all accessories as required to meet system requirements	1	NO*		₹ -	₹	-
B	AC Plant -2: DX TYPE AIR COOLED CONDENSING UNIT FOR ESP control room						
1	DX type, air cooled condensing unit of minimum 40 TR capacity. The refrigerant compressor shall be Scroll, hermetic / Semi-hermetic type suitable for Refrigerant R-134a / R-407c / R-410a environment friendly HFC refrigerants with drive package, Suction and discharge valves, capacity control system, expansion valve, crank case heater etc. A control panel shall be provided to house all gauges and controls. The panel shall contain all necessary terminal strips to facilitate external wiring. The unit shall be complete with expansion valve, all necessary fittings, accessories, insulated refrigerent piping to and from AHUs, foundation bolts, nuts, washers etc complete in all respect.	2	Nos.		₹ -	₹	-
2	Sheet metal cabinet type air handling units (double skin as per specification) The draw through horizontal AHUs shall comprise of, Dampers, pre filter, fine filters, DX- cooling coil, Electric heating coil, Electric steam humidifier and Fan section with fan & TEFC sq cage induction motor, drive set, condensate drain pan, thermostatic controls and other accessories, like ladder along with supporting structure for filter and plenum, etc. to meet the AC load of ESP control room area as per specification. Fine Filters in common discharge plenum of AHUs as per specification.	2	Nos.		₹ -	₹	-
3	Monsoon reheating / winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat etc.	1	LOT		₹ -	₹	-
4	PAN type HUMIDIFIER for each AHU room complete with humidistat, geyserstat safety controls, make up water piping from make up tank / nearest source of water, valves fittings etc	1	LOT		₹ -	₹	-
5	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters (pre and fine), modulating dampers, support structure and other accessories etc. as per specification for each AHU room (2x100% configuration for each AHU room) .	1	LOT		₹ -	₹	-
C	AC-Plant-3: CENTRAL CHILLED WATER SYSTEM FOR SERVICE BUILDING						
1	Water cooled Chilling machine each of minimum 220 TR capacity consisting of (a) Screw refrigerant compressor complete with motors, control panel, multi drive set, controls and interlocks other accessories as specified; (b) Water cooled condenser adequately sized with suitable anti corrosive paint coating for tube and shell part coming in contact with soft water & other accessories and (c) Shell & tube type water chiller & other accessories, as specified.	2	Nos		₹ -	₹	-
2*	Sheet metal cabinet type air handling units (double skin as per specification) consisting of chilled water cooling coil, centrifugal blower, TEFC sq cage induction motor, VVFD drive set, non-return damper, motorised volume control damper, filters (pre filter), 3 way motorised mixing valve with thermostatic controls and other accessories to meet the AC load of all floors of service building. Filters for AHUs shall be included in common discharge plenum of AHU as per specification.	10	Nos*		₹ -	₹	-

S.NO.	ITEM DESCRIPTION	QUANTITY	UNIT	SUPPLY		E&C	
				Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)	Unit E&C Price (INR)	Total E&C Price (INR)
3	Fibreglass reinforced plastic (FRP) construction cooling towers complete with fan, motor, FRP basin, nozzles, make-up water & quick fill water connection, Instruments, drains, equalising connection, piping, valves, strainers, ladder, structural support & all accessories as specified.	2	NO		₹ -		₹ -
4	Centrifugal pump sets for condenser water recirculation complete with TEFC motor & all accessories as specified.	2	NO		₹ -		₹ -
5	Centrifugal pump sets for chilled water recirculation complete with TEFC motor set & all accessories, as specified.	2	NO		₹ -		₹ -
6*	MS/FRP Expansion Tank (insulated) spray galvanised from inside for chilled water with all accessories like instruments and valves as required, capacity min. 1 m3 .	1	NO*		₹ -		₹ -
7*	MS/FRP Make up Tank (Tanks shall be MS & inner surface spray galvanised. Make up water line with with all accessories like instruments and valves as required. Capacity of each tank min. 4 m3 .	1	NO*		₹ -		₹ -
8	Condenser water piping with necessary fittings like tee, reducer, expander, elbow, flange, strainer with flange, air vent, all types of valves with flanges, valves including piping from makeup water tank to cooling tower, chiller, condenser water pump, pan humidifiers of each AHU room etc as specified.	1	LOT		₹ -		₹ -
9	Complete Insulated Chilled water piping within AC plant room, AHU rooms and from AC plant room to various AHU rooms, chilled water pump, expansion tank complete necessary fittings like tees, reducers, expanders, elbows, flanges, all types of valves with flanges, strainers with flanges, air vents etc with supports, insulation with finish as per specifications.	1	LOT		₹ -		₹ -
10	Monsoon reheating/ winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc.	1	LOT		₹ -		₹ -
11	PAN type HUMIDIFIER for each AHU room complete with humidistat, geyserstat safety controls, make up water piping from make up tank / nearest source of water, valves fittings etc	1	LOT		₹ -		₹ -
12	Fresh air fan (axial flow type), complete with motor,inlet cone, air filters (pre and fine), modulating dampers, support structure and other accessories etc. as per specification for each AHU room (2x100% configuration for each AHU room) .	1	LOT		₹ -		₹ -
13*	Non Chemical water treatment equipment (Online chemical scale preventer) with all accessories as required to meet system requirements	1	NO*		₹ -		₹ -
D	ITEMS COMMON TO ALL AC PLANTS				₹ -		₹ -
1*	Galvanised steel sheets (finished) having zinc coating of atleast 275 gms/ sqm ducting complete with accessories like flanges, bracings, nuts, bolts, washers, gasket, locknut, hilti, threaded hanging rods, supports, vanes, splitter dampers, sealant, adhesive etc. required to make the installation complete in all respect.						
(a)*	18G.	1000	SQM*		₹ -		₹ -
(b)*	20G.	800	SQM*		₹ -		₹ -
(c)*	22G.	400	SQM*		₹ -		₹ -
(d)*	24G.	100	SQM*		₹ -		₹ -
2*	Fire damper.				₹ -		₹ -
(a)*	Fire damper with auto resetting, limit switches, indication lamps etc.	30	SQM*		₹ -		₹ -
(b)*	Motorized actuator with single phase power supply for the above fire damper.	45	NOS*		₹ -		₹ -
3*	Supply air grill/diffuser with VCD (Extruded Aluminium) complete with fixing frames, nuts, bolts, gaskets, washers etc	10	SQM*		₹ -		₹ -
4*	Return air grill/diffuser without VCD (Extruded Aluminium) complete with fixing frames, nuts, bolts, gaskets, washers etc	10	SQM*		₹ -		₹ -
5*	GI Volume control dampers for Duct complete with fixing arrangement.	10	SQM*		₹ -		₹ -
6*	Acoustic insulation of the first 5m of ducting from AHU outlets with finsih as specified.	1200	SQM*		₹ -		₹ -
7*	Thermal insulation of supply air duct & return air duct with finish as specified.	1300	SQM*		₹ -		₹ -
8*	Make up & Drain piping with and without insulation from various equipment upto nearest available drain point with necessary fittings like tees, reducers, expanders, elbows, flanges, valves with flanges, U trap etc as per specifications.						
a*	50mm	300	Rmt*		₹ -		₹ -
b*	40mm	200	Rmt*		₹ -		₹ -
E	AC SYSTEM FOR AUX. BLDG						
1*	Air Cooled PAC-Unit complete with all accessories as specified The package unit shall be complete with all accessories like duct hetaers, pan humidifier, filters, acoustic insulation of duct for 5m from PU, drain piping with insulation upto nearest drain, required instrumentation etc						
1.1*	10 TR net capacity	1	No*		₹ -		₹ -
1.2*	MONSOON REHEATING / WINTER HEATING KIT comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat & humidistat/ sensors etc. for below mentioned PAC.	1	SET*		₹ -		₹ -
1.3*	PAN type HUMIDIFIER for each AHU room complete with humidistat, geyserstat safety controls, make up water piping from make up tank / nearest source of water, valves fittings etc	1	SET*		₹ -		₹ -
1.4*	Fresh air fan (axial flow type), complete with motor,inlet cone, air filters (pre and fine), modulating dampers, support structure and other accessories etc. as per specification for each AHU room (2x100% configuration for each AHU room) .	1	SET*		₹ -		₹ -
2*	AIR COOLED SPLIT UNITS consisting of outdoor unit (having compressor condenser coils with fan and motor), indoor unit (having evaporator coil, filter,fan with motor), interconnecting refrigerant piping as per site requirement, drain piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator / MCB, fixing frame for indoor and outdoor unit, Stablizer, etc. with best BEE Rating as per specification.						
2.1*	2.0 TR capacity (non-ductable type, 240 V, 1 phase) with isolation switch, i.e. MCB of suitable rating as specified, voltage stabilizer, cabling, all supporting structure, refrigerant piping to suite actual site condition, drain piping upto nearest drain etc. Split AC shall be of best rating as per latest BEE based on ISEER.	42	NOS*		₹ -		₹ -
2.2*	1.5 TR capacity (non-ductable type, 240 V, 1 phase) with isolation switch, i.e. MCB of suitable rating as specified, voltage stabilizer, cabling, all supporting structure, refrigerant piping to suite actual site condition, drain piping upto nearest drain etc. Split AC shall be of best rating as per latest BEE based on ISEER.	16	NOS*		₹ -		₹ -
3*	AIR COOLED CASSETTE SPLIT UNITS consisting of outdoor unit (having compressor condenser coils with fan and motor), indoor unit (having evaporator coil, filter,fan with motor), interconnecting refrigerant piping as per site requirement & fittings with insulation, cordless remote, electrical power cord upto the nearest available point along with isolator / MCB, fixing frame for indoor and outdoor unit, Stablizer,etc. ith BEE Rating as per specification.						
3.1*	4.0 TR CASSETTE AC capacity (non-ductable type, 240 V, 1 phase) with isolation switch , i.e MCB of suitable rating as specified, voltage stabilizer, cabling, all supporting structure and refrigerent piping to suite actual site condition, drain piping upto nearest drain etc.	4	NOS*		₹ -		₹ -
3.2*	2.0 TR CASSETTE AC capacity (non-ductable type, 240 V, 1 phase) with isolation switch , i.e MCB of suitable rating as specified, voltage stabilizer, cabling, all supporting structure and refrigerent piping to suite actual site condition, drain piping upto nearest drain etc.	4	NOS*		₹ -		₹ -

[illegible]

APPENDIX-A (SPECIAL TOOLS & TACKLES FOR MAINTENANCE)					
NAME OF PROJECT:			1X800 MW HPGCL YAMUNA NAGAR TPS		
NAME OF PACKAGE:			AC SYSTEM		
TECHNICAL SPECIFICATION No:			PE-TS-510-553-A001		
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)
1	FLAT D WRENCH - 6 MM TO 32 MM (12 Pcs)	SET	1		₹ -
2	BOX WRENCHES - 6 MM TO 22 MM (14 Pcs)	SET	1		₹ -
3	RING SPANNER - 6 MM TO 32 MM (12 Pcs)	SET	1		₹ -
4	ALLEN KEYS - 2 MM TO 10 MM	SET	1		₹ -
5	CRESCENT SCREW SPANNER	NO.	1		₹ -
6	SCREW DRIVER	NO.	1		₹ -
7	OFFSET SCREW DRIVER	NO.	1		₹ -
8	INSULATED PLIER	NO.	1		₹ -
9	TORCH LIGHT FOR 2 CELL	NO.	1		₹ -
10	HAMMER 1 LB	NO.	1		₹ -
11	OIL CAN	NO.	1		₹ -
12	POCKET THERMOMETER - 0 TO 50 DEG. C)	NO.	1		₹ -
13	INSULATION TAPE ROLL	NO.	1		₹ -
14	STEEL FOOT RULE - 12"	NO.	1		₹ -
15	FEELER GAUGE 9 BLADES	NO.	1		₹ -
16	PIPE WRENCH	NO.	1		₹ -
17	FLARE NUT (1/4")	NOS.	6		₹ -
18	FLARING TOOL	NO.	1		₹ -
19	TUBE CUTTER	NO.	1		₹ -
20	GAS CHARGING PIPE	NO.	1		₹ -
21	NITROGEN CHARGING ADAPTER	NO.	1		₹ -
22	FREON PRESSURE GAUGE (2 1/2" DIA DIAL) 0 - 300 MM PSI	NO.	1		₹ -
23	FREON PRESSURE GAUGE (2 1/2" DIA DIAL) 30 - 150 MM PSI	NO.	1		₹ -
24	PSYCHRO METER	NO.	1		₹ -
25	LOCK WITH KEY FOR TOOL BOX	NO.	1		₹ -
26	RATCHET 1/4"	NO.	1		₹ -
27	MS TOOL BOX	NO.	1		₹ -
Total				₹ -	₹ -
NOTES					
1	Above is the minimum list. Any other Tools and tackles required for AC system w.r.t. Mechanical, Electrical and C&I part shall also be provided by the Bidder as per system / customer requirement without any commercial & Delivery implication to BHEL. Only yellow highlighted cells to be filled.				

APPENDIX-B (COMMISSIONING SPARES)					
NAME OF PROJECT:			1X800 MW HPGCL YAMUNA NAGAR TPS		
NAME OF PACKAGE:			AC SYSTEM		
TECHNICAL SPECIFICATION No:			PE-TS-510-553-A001		
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-Works Price (INR)	Total Ex-Works Price (INR)
1	AHU FAN BELTS (EACH TYPE & SIZE)	SET	1		₹ -
2	PRESSURE GAUGE (FOR EACH TYPE AND RANGE)	NO	1		₹ -
3	TEMPERATURE GAUGE (FOR EACH TYPE AND RANGE)	NO	1		₹ -
4	FILTER (EACH SIZE)	SET	1		₹ -
5	COMPRESSOR OIL	Ltr.	1 LOT		₹ -
6	REFRIGERANT GAS OF EACH TYPE IN A NON-RETURNABLE CYLINDERS	Kg	1 LOT		₹ -
Total				₹ -	₹ -
NOTES					
1	Above is the minimum list. Any other commissioning spare required for AC System w.r.t. Mechanical, Electrical and C&I part shall also be provided by the Bidder as per system / customer requirement without any commercial & Delivery implication to BHEL.				

ANNEXURE - II: MANDATORY SPARES				
NAME OF PROJECT:		1X800 MW HPGCL YAMUNA NAGAR STPP		
NAME OF PACKAGE:		AC SYSTEM		
TECHNICAL SPECIFICATION No:		PE-TS-510-553-A001		
S.NO.	ITEM DESCRIPTION	QUANTITY	UNIT	SUPPLY
				Total Ex-Works Price (INR)
I	MECHANICAL SPARES			
1	Reciprocating Chilling Machine			
a	Compressors with motors	1	No.	
b	Piston	1	Set.	
c	Valve Plate, spring plate, seating washer	4	Nos.	
d	Suction and discharge valve required for compressors	1	Set.	
e	Piston ring/Guide ring	6	Sets	
f	V-belts for compressor	4	Sets	
g	Oil pressure failure safety switch	2	Nos.	
h	Crank-case heater	2	Nos.	
i	Gaskets	2	Sets	
j	Set of ‘O’ rings and oil seals each type	2	Sets	
k	Suction filter elements	4	Sets	
l	Bearings	2	Sets	
m	Complete set of suction Valves	2	Sets	
n	Complete set of Discharge Valves	2	Sets	
2	Screw Compressor Chilling Machine			
a	Oil filter	1	set	
b	Oil filter O ring	1	set	
c	Refrigerant filter	1	set	
d	Ref filter O ring	1	set	
e	EXV valve	1	set	
f	Differential pressure switch	1	no.	
g	Solenoid valve 2 way	1	no.	
h	Solenoid valve coil	1	set	
i	Solenoid valve O- ring	1	set	
j	Solenoid valve gasket	1	set	
k	Master solenoid valve	1	no.	
l	Master solenoid valve coil	1	set	
m	Master solenoid gasket	1	set	
3	Air handling unit (for each model)			
A	Impeller / Blower with Motor	1	No	
B	V-belts for AHU Blower	4	Sets	
C	AHU Blower bearing	2	Sets	
D	Blower motor bearing	2	Sets	
E	Filters at suction and discharge of AHU	50% of installed population	%	
4	Controls (for each model)			
a)	HP/LP cut out	1	No.	
b)	Anti-freeze thermostat	2	Nos.	
5	Cooling Tower (for each model)			
a)	Nozzles for cooling towers	20	Nos	
b)	Float valve assembly	1	No	
c)	Fan Bearings	1	Set	
d)	Motor bearings	1	Set	
e)	V-belt for C.T. fan (if applicable)	1	Set	
6	Valves (For each type & size) for A/C system			
a.	One (1) No. where total quantity of a particular type & size of valve is less than or equal to 10 (ten)		no.	
b	Two (2) Nos. where total quantity of a particular type and size of valve is less than 40 but more than 10.		nos.	
c	10% of the total quantity (to nearest whole no. of a particular type & size where the total quantity of a particular type & size of valve is more than 40.		%	
7	Humidity sensors	one (1)	no.	
8	Geyserstat	Two (2)	nos.	
9	Antifreeze thermostat	one (1)	no.	
10	Local Humidity Indicator	Two (02)	no.	
II	ELECTRICAL SPARES			
b.	415 V Motors			

S.NO.	ITEM DESCRIPTION	QUANTITY	UNIT	SUPPLY
				Total Ex-Works Price (INR)
1	Terminal plates	10 Nos. each for small motors upto 30 kW & 4 Nos. each for more than 30 kW	Nos.	
2	Heaters	2 sets	Set	
3	Greasing arrangements	4 sets each type of motor	Set	
4	Bearings (DE and NDE) for each type and rating of motor	4 sets	Set	
III	CONTROL & INSTRUMENTATION (MANDATORY SPARES)			
1.00.01	Measuring & Field Instruments			
1.00.01.02	Temperature Elements and Thermowells			
(i)	Thermocouple/RTD elements	Nos-10% of flue gas temp, coal air mixture temp, boiler/TG metal temp thermocouples and 5% for other applications of total duplex thermocouple element assemblies and duplex RTD assemblies (with head assembly, terminal block and nipple) of each type and length whichever is more. The element assembly shall be suitable for direct replacement in the corresponding thermowell.	Nos.	
(ii)	Thermowells	Nos-10% for each type of temperature sensors or a minimum of one for each type & size, whichever is more	Nos.	
1.00.01.03	Temperature Transmitters and Electronic Transmitters of all type, range and model no. (For Pressure, DP, Temp, Flow, Level), Process Transmitters, Radar type level transmitter, 3D type level Transmitter with local display, Magnetic/Electromagnetic flow meter with local display, mass flow meter with local display., Process meters, Junction Box, Position Transmitter, Transducer or any other instrument etc.	Nos-10% of total number of instruments/transducers offered for each model and type, rating or a minimum of one number for each model, rating and type , whichever is more.	Nos.	
1.00.01.04	Process actuated switch Devices- As applicable for each package as per following:	Nos-10% of total nos. or 1 no. of each make, model, range and type whichever is more	Nos.	
	1. Temperature Switches			
	2. Differential pressure Switches			
	3. Pressure switches			
	4. Flow switches			
	5. Level Switches			
	6. Safety Protection Switches			
1.00.01.05	Local Gauges like temperature gauges, pressure gauges, differential Pressure gauges, flow gauges, flow meters with local display etc.	Nos-10% of total number of instruments/transducers offered for each model and type, rating or a minimum of one number for each model, rating and type, whichever is more.	Nos.	
1.00.01.06	All type of Rota meters & Sight Flow Indicator.	Nos-1 no. of each range and type	Nos.	
1.00.01.13	Any other instruments not indicated in the tender P&ID & Specification but required for control, monitoring and operation of the equipment/plant/systems	Nos-10% or 2 nos. of each type whichever is more	Nos.	
1.00.01.14	Level Gauges	Nos- a) 10% or 2 nos. whichever is more of each type of illuminators with holder and reflector. b) 20% or 5 nos. whichever is more of each type of bulb. c) 10% or 2 nos. whichever is more of each type of bi-color rollers. d) 10% or 2 nos. whichever is more of each type of glass along with pair of gaskets (cushion & wet gaskets). e) 10% or 2 nos. whichever is more of each type of gaskets for gauge cocks/valve bonnet/ packing. f) 10% or 2 nos. whichever is more of each type scale.	Nos.	
1.00.01.15	Complete Electronic cards, PCB assembly and Power supply card assembly.	Nos-10% of Electronic card/PCB assembly for each type, model & rating or a minimum of one number for each model, rating and type , whichever is more for each type of Transmitter, switch & Flow Meters.	Nos.	
1.00.05	Microprocessor based control system			
1.00.05.01	Complete set including integral microprocessor based control system along with system & application software and special cables.	Nos.-10% or 1 set of each type/model whichever is more	Nos.	
1.00.06	Relay based Control Panels			
1.00.06.01	LEDs for indicating lights	Nos.-100% of qty installed.	Nos.	
1.00.6.02	Control circuit fuses Semiconductor Fuses	Nos.-300% of installed of each type, current rating.	Nos.	
1.00.06.03	MCB/MCCB	Ten percent spare replacement of each current rating required shall be furnished	%	

S.NO.	ITEM DESCRIPTION	QUANTITY	UNIT	SUPPLY
				Total Ex-Works Price (INR)
1.00.06.04	Cooling Fans of each type, model and rating.	20% or 2 nos. of each type and rating, (whichever is more).	%	
1.00.06.05	Relays modules & contactors.	Nos.-20% spare of qty Installed of each type & rating.	Nos.	
1.00.06.06	Push buttons, ILPBs of each type.(complete with contact elements)	Ten (10) percent or 2 nos (whichever is more) of each type and color	%	
1.00.06.07	Electric meter like Ammeters, Voltmeters etc.	Ten (10) percent or 2 nos (whichever is more) of each type	%	
1.00.06.08	Control switches	5 nos. of each type and rating	Nos.	
1.00.06.09	Selector switches	1 no. of each type and rating	Nos.	
1.00.06.10	Any special meter	1 no. of each type and rating	Nos.	
1.00.06.11	Power supply modules.	Ten (10) percent or 2 nos (whichever is more) of each type	%	
1.00.06.12	Control supply transformers	1 no. of each type and rating	Nos.	
1.00.09	Erection hardware mounted in field, LIE & LIR			
1.00.09.01	Instrument valves, manifold, fittings, impulse pipe, impulse tubes, drains pipes etc.	Nos-Ten (10) percent of each type, rating, model number and size of devices.	Nos.	
1.00.09.02	Condensate pots of each type & Size installed	Nos-Ten (10) percent of total number of Installed or four numbers whichever is higher .	Nos.	
1.00.09.03	Manifold 2 way, 3 way, 5 way valve manifolds	Nos-Ten (10) percent of each type & Size installed	Nos.	
1.00.09.04	Fittings	Nos-Twenty (20) percent of each type & Size installed	Nos.	
1.00.09.05	Purge meters	Ten (10) percent of each type & Size installed	%	
1.00.09.06	Air Filter cum Regulator	Ten (10) percent of each type, make and model installed	%	
1.00.09.07	MCB, and Power sockets used in LIE/LIR.	Ten (10) percent of each type	%	
1.00.09.08	Fuses used in LIE/LIR.	Fifty (50) percent of each type of	%	
2.00.00	ELCTRICAL ACTUATORS WITH INTEGRAL STARTERS	10% or 1 no. of each type, class, size and model whichever is more.	%	
Total				₹ -
NOTES				
1	Wherever quantity has been specified percentage (%) the quantity of mandatory spares to be provided by the bidder shall be distributed into various ranges/size/rating/type (as the case may be) in the same proportion of the main population. In case the quantity so calculated happens to be fraction, the same should be rounded off to next higher whole number.			
2	Wherever the quantities have been indicated for each type, size, thickness, material, radius, range etc., these shall cover all items supplied and installed and the breakup for these shall be furnished in the bid.			
3	Incase spares indicated in the list are not applicable to the particular design offer by the bidder, the bidder should offer spares applicable to offered design with quantities generally in line with the approach followed in the above list.			
4	Mandatory spares listed in Price Schedule is bare minimum requirement. In case any additional mandatory spares requirement is covered elsewhere in the tender specification apart from specified above, same shall be deemed to have been covered in bidder's scope of supply.			
5	One set corresponds to actual quantity of components and devices as installed for the equipment at Site.			
6	All mandatory spares shall be supplied as per the requirement of the specifications. In case any spare indicated in the specification is "not applicable" for particular equipment, then suitable applicable alternate spare has been offered / shall be supplied by the bidder without any financial implication."			
7	Any item which is quoted as "not applicable" by the bidder in the above list and is found to be "applicable" at a later date, shall be supplied by the bidder without any commercial and delivery implication.			
8	Any cell left blank in the unpriced schedule shall be treated as "Quoted" and is included in total price.			
9	The list of mandatory spares given above shall be finalized during detailed engineering. Prices for any variation in quantity shall be adjusted based on unit rate deduced from total prices quoted by bidder against respective mandatory spares.			
10	Interchangeability and Packing: All spares supplied under this contract shall be strictly interchangeable with parts for which they are intended for replacements. These spares shall include all mounted accessories like components, boards, add or items, fittings, connectors etc. and be complete in all respects so that the replacement of the main items by these spares does not require additional item. All electronic modules should be preset and/or preprogrammed for ready use at site. Alternatively, suitable instruction sheet indicating the details of required PCB jumper position, BCD which is setting, EPROM/ROM listing etc should be packed along with each module. Also a caution mark sign should be put on all such module which needs pre-setting/ re programming before putting them in to service. The spare shall be treated and properly packed for long term storage.			
11	Identification: Each spare shall be clearly marked and labeled on the outside of the packing with its description. When more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.			
12	Contract-Qunatities: The quantities & mandatory spares shall be as specified herein. Any other mandatory spares not listed above however required for any instrumentation item shall also be supplied by bidder. The final quantities may require addition/deletion during the contract stage. The Bidder shall furnish unit price for each mandatory spare under appropriate schedules which shall be used for adjusting the contract price in the event of addition/ deletion from contract quantities specified herein.			
13	Documentation: Bidder shall furnish detailed catalogue, part number and subassembly/ assembly drawings with manufacturer's cross reference for each spare part. The data and information furnished shall be of nature and content as per owner's approval to enable owner procurement of these spare parts directly from the respective manufacturer.			