

<b>NAME OF BIDDER :</b>	
<b>NAME OF PROJECT:</b>	<b>2 x 500MW TUTICORIN TPP-FGD SYSTEM</b>
<b>NAME OF PACKAGE:</b>	<b>HVAC FOR FGD</b>
<b>TECHNICAL SPECIFICATION:</b>	<b>PE-TS-483-(571-13000-A)-A001 (REV-0)</b>
<b>TENDER ENQUIRY NO :</b>	<b>PE/PG/NTF/E-6776/2021 Dated 28.09.2021</b>

S. No.	DESCRIPTION	UNIT	QTY	Total Ex-works Price (INR)	Freight in %	Freight in INR	Total FOR Site Price Including Freight but excluding GST (INR)	Total FOR Site Price Including Freight but excluding GST in Words
1.0	Total lump sum firm price for Supply part including Services comprising of design (i.e. preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles, fill of lubricants & consumables along with spares for erection, start-up and commissioning as required, forwarding, proper packing, shipment and delivery at site, unloading, handling, transportation & storage at site, in-site transportation, assembly, erection & commissioning, final painting at site, minor civil work, trial run at site and carrying out Performance guarantee / Functional / Demonstration tests at site (As applicable), training of NTPC/BHEL's O&M staff and OPERATION AND MAINTENANCE SERVICE including manpower, supervision, consumables etc. for operation & maintenance of HVAC System for a duration of 12 unit months after commissioning of HVAC System for the scope defined as per technical specification & final handing over in flawless condition of the package to the end customer complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order.	LOT	1					
2.0	<b>MAJOR BREAK-UP OF PRICES GIVEN IN 1.0 ABOVE.</b>							
2.1	Total lump sum firm price for <b>Supply part</b> comprising of design (i.e. preparation and submission of drawing /documents including "As Built" drawings and O&M manuals), engineering, manufacture, fabrication, assembly, inspection / testing at vendor's & sub-vendor's works, painting, maintenance tools & tackles (as per Appendix-A), fill of lubricants & consumables along with spares for erection (as per Appendix-B), start-up and commissioning spares as required, forwarding, proper packing, shipment and delivery at site for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. <b>(Break-up as per Annexure-I)</b>	LOT	1					
2.2	Total lumpsum firm prices for <b>Services</b> comprising of service part for unloading, handling, transportation & storage at site, in-site transportation, assembly, erection & commissioning, final painting at site, minor civil work, trial run at site and carrying out Performance guarantee / Functional / Demonstration tests at site (As applicable), Training of NTPC/BHEL personnel for total 15 days (in 3-4 parts of 4-5 days each) covering hands on experience of operation and maintenance of air conditioning and ventilation system. Site personnel shall be trained for operation and maintenance activities covering daily, weekly, monthly, quarterly and yearly maintenance checks and handover in flawless condition of the package to the end customer complete with all accessories for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. <b>(Break-up as per Annexure-I)</b>	LOT	1					
2.3	Total lumpsum firm price for providing <b>OPERATION AND MAINTENANCE SERVICE</b> including manpower, supervision, consumables etc. for operation & maintenance of HVAC System for a duration of 12 Months after commissioning of HVAC system & final handing over to end customer in flawless condition for the scope defined as per technical specification.	LOT	1					

Note:  
1. For detailed scope of Operation and Maintenance Services, Technical Specification (PE-TS-483-(571-13000-A)-A001) to be referred. Any variation in no. of months shall be exercised based on unit rate arrived from price quoted against Sl.no 2.3 above.

**ANNEXURE-I**

<b>NAME OF PROJECT:</b>		<b>2 x 500MW TUTICORIN TPP-FGD SYSTEM</b>					
<b>NAME OF PACKAGE:</b>		<b>HVAC FOR FGD</b>					
<b>TECHNICAL SPECIFICATION:</b>		<b>PE-TS-483-(571-13000-A)-A001 (REV-0)</b>					
S. N.	Description	UNIT	Quantity	Supply		Services (E&C)	
				Unit Ex-Works (INR)	Total Ex-Works (INR)	Unit Ex-Works (INR)	Total Ex-Works (INR)
<b>A</b>	<b>AC SYSTEM</b>						
1a*	DX type, air cooled condensing unit of <b>minimum 40 TR (ACTUAL)</b> 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 refrigerant piping to and from AHUs, foundation bolts, nuts, washers etc complete in all respect.	<b>2</b>	<b>Nos</b>				
1b*	Sheet metal cabinet type air handling units (double skin as per specification) The draw through horizontal AHUs (min. 60 mmWC SP) shall comprise of Dampers, pre filter, fine filters, DX- cooling coil, Fan section with fan & TEFC sq cage induction motor, VFD, 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 control room area as per specification. Each centrifugal fan shall be provided with VFD driven motor along with VFD (along with starter panel)	<b>2</b>	<b>Nos</b>				
1c*	Monsoon reheating / winter heating kit comprising strip heaters, safety controls, air-stat, contactors, frame work, thermostat etc.	<b>1</b>	<b>LOT</b>				
1d*	Pan type humidifier, comprising geyser stat, for each AHU room.	<b>1</b>	<b>LOT</b>				
1e*	Fresh air fan (axial flow type), complete with motor, inlet cone, air filters (pre and fine), dampers etc.	<b>1</b>	<b>LOT</b>				
2*	Thermal insulation of supply air duct & return air duct with finish as specified.	<b>600</b>	<b>SQM*</b>				
3*	MS medium class drain piping upto nearest drain point with insulation & cladded and without insulation						
a*	50mm with insulation and cladding	<b>12</b>	<b>Rmt*</b>				
b*	40mm with insulation and cladding	<b>15</b>	<b>Rmt*</b>				
c*	50mm without insulation and cladding	<b>12</b>					
d*	40mm without insulation and cladding	<b>15</b>					
4*	Air-cooled split type AC units consisting of condensing unit & evaporating unit including refrigerant						
(a)*	5.0 TR capacity (ductable type, 415 V, 3 phase with isolation switch).	<b>2</b>	<b>Nos*</b>				
(b)*	3.0 TR capacity (non-ductable type, 430 V, 3 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.	<b>4</b>					
(c)*	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 and refrigerant piping to suite actual site condition.	<b>20</b>	<b>Nos*</b>				
(d)*	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 and refrigerant piping to suite actual site condition.	<b>2</b>	<b>Nos*</b>				

B	VENTILATION SYSTEM						
1*	Roof extractor units (axial flow type) with hood, disconnect switch and all accessories as specified. <b>Following fan shall have 15 mmwc static pressure.</b>						
a)*	Capacity 40,000 CMH with Motor rating 5.5 KW	2	Nos.*				
b)*	Capacity 20,000 CMH with Motor rating 2.2 KW	2	Nos.*				
2*	Axial flow supply fans with pre and fine filter (wall mounted) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen along with support structure and all other accessories (suitable for 415V/3-phase supply). <b>Following fan shall have 30 mmwc static pressure.</b>						
a)*	Capacity 10,000 CMH with Motor rating 2.2 KW	42	Nos.*				
b)*	Capacity 7,500 CMH with Motor rating 1.5 KW	12	Nos.*				
c)*	Capacity 6,000 CMH with Motor rating 1.1 KW	2	Nos.*				
d)*	Capacity 4,000 CMH with Motor rating 0.75 KW	2	Nos.*				
3*	Axial flow supply fans with pre filter (wall mounted) complete with casing, TEFC sq cage induction motors & mounting frame, MS rain protection cowl, bird screen along with support structure and all other accessories (suitable for 415V/3-phase supply) as specified. <b>Following fan shall have 20 mmwc static pressure.</b>						
a)*	Capacity 10,000 CMH with Motor rating 1.5 KW	2	Nos.*				
b)*	Capacity 7,500 CMH with Motor rating 1.1 KW	2	Nos.*				
c)*	Capacity 6,000 CMH with Motor rating 1.1 KW	4	Nos.*				
d)*	Capacity 4,000 CMH with Motor rating 0.75 KW	4	Nos.*				
4*	Axial flow exhaust fans (Bifurcated type, spark proof construction, wall mounted) complete with casing, flame proof motor & mounting frame, MS rain protection cowl, bird screen along with support structure and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. <b>Following fan shall have 15 mmwc static pressure.</b>						
a)*	Capacity 15,000 CMH with Motor rating 1.5 KW	4	Nos.*				
b)*	Capacity 10,000 CMH with Motor rating 1.5 KW	10	Nos.*				
c)*	Capacity 7,500 CMH with Motor rating 1.1 KW	2	Nos.*				
d)*	Capacity 5,000 CMH with Motor rating 0.75 KW	2	Nos.*				
e)*	Capacity 4,000 CMH with Motor rating 0.75 KW	6	Nos.*				
	Capacity 2,000 CMH with Motor rating 0.55 KW	4	Nos.*				
5*	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq cage induction motor & mounting frame, MS rain protection cowl, bird screen along with support structure and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. <b>Following fan shall have 10 mmwc static pressure.</b>						
a)*	Capacity 15,000 CMH with Motor rating 1.1 KW	30	Nos.*				
b)*	Capacity 10,000 CMH with Motor rating 0.75 KW	65	Nos.*				
c)*	Capacity 7,500 CMH with Motor rating 0.55 KW	12	Nos.*				
d)*	Capacity 6,000 CMH with Motor rating 0.55 KW	4	Nos.*				

e)*	Capacity 4,000 CMH with Motor rating 0.55 KW	5	Nos.*				
f)*	Capacity 2,000 CMH with Motor rating 0.37 KW	5	Nos.*				
6*	Exhaust fan (propeller type) completes with induction motor & mounting frame MS rain protection cowl, bird screen and all other accessories as specified (suitable for 240V/ 1 phase). <b>Following fan shall have 5 mmwc static pressure.</b>						
a)*	Capacity 1000 CMH with Motor rating 100 watts	24	Nos.*				
C	<b>COMMON FOR AC AND VENTILATION SYSTEM</b>						
1*	Supply air ducting (finished) for above area complete with dampers, grills (with VCD & without VCD), supports (painted) and all accessories as specified.						
1.1*	Finished (Actual quantity of duct erected at site, excluding the scrap) GSS (zinc coating 180 gms/sq.m min.) Ducting with support structure etc.						
a)*	18 G	250	SQM*				
b)*	20 G	450	SQM*				
1.2*	Supply air Grill/diffuser with VCD (Extruded Aluminium).	20	SQM*				
1.3*	Return air Grill/diffuser without VCD (Extruded Aluminium).	22	SQM*				
1.4*	Supply air Grill/diffuser with VCD (MS, POWDER COATED).	18	SQM*				
1.5*	Return air Grill/diffuser without VCD (MS, POWDER COATED).	6	SQM*				
1.6*	Volume control damper in GI construction as per specification	8	SQM*				
1.7*	Wall mounted dampers (gravity operated) for different areas.	8	SQM*				
1.8*	Inlet Louvres	4	SQM*				
1.9*	MS Duct With Epoxy paint for battery room.	5	SQM*				
2*	ACOUSTIC INSULATION (AS PER THE SPECIFICATION)	200	SQM*				
3*	FIRE DAMPER						
a)*	Fire damper	35	SQM*				
b*)	Fusible Link type Fire Damper	2	Nos*				
4*	Motorized Actuator with single phase power supply for the above Fire damper and Volume control	45	Nos*				
5*	Handling arrangement for ventilation equipment's						
a)*	Manually operated, platform trolley of 1Ton capacity	1	Nos*				
b)*	1T Chain pulley block with travelling trolley	1	Nos*				
c)*	1T chain pulley block without travelling trolley	1	Nos*				
6	Cable tray, conduits, junction box, lugs and glands, Local control panel and Field instruments like pressure gauge, temperature gauge, switches and transmitters for pressure, flow and temperature measurement, differential pressure switch across filters, flow meters, RH and Temperature sensor and other required instruments as per specifications, including necessary control panel form hook up with main DDCMIS as per specifications	1	LOT				
7*	Providing full support during FAT of DDCMIS, preparation of control scheme, and commissioning of DDCMIS as per relevant specification.	20	Mandays*				

8	Total lumpsum price for special tools & tackles for maintenance inclusive of packing forwarding, transportation up to site, etc. <b>(Break up of to be furnished as per Appendix- A)</b>	1	LOT				
9	Total lumpsum price for commissioning spares inclusive of packing forwarding, transportation up to site, etc. <b>(Break up of to be furnished as per Appendix- B)</b>	1	LOT				
<b>GRAND TOTAL</b>							

Note :

1. The bidder shall furnish unit rates for variable item (marked \*) for necessary adjustment (plus or minus) variation during detailed engg. stage. The unit rates quoted above shall be considered and no separate unit rates shall be quoted. Unit rates shall be valid throughout the contract.
2. Bidder to note that above BOQ for this tender has to be read in conjunction with tender specification. Any item, if not mentioned in above BOQ but indicated in tender specification and required for completion of the system shall deemed to be included in above price.

**ANNEXURE-A [Maintenance tools & tackles]**

<b>NAME OF PROJECT:</b>		<b>2 x 500MW TUTICORIN TPP-FGD SYSTEM</b>		
<b>NAME OF PACKAGE:</b>		<b>HVAC FOR FGD</b>		
<b>TECHNICAL SPECIFICATION:</b>		<b>PE-TS-483-(571-13000-A)-A001 (REV-0)</b>		
<b>S. N.</b>	<b>Description</b>	<b>UNIT</b>	<b>Quantity</b>	<b>Total Ex-Works (INR)</b>
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 ( SUITABLE 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	PRESSURE GAUGE (2 1/2" DIA DIAL) 0 - 300 PSI	NO.	1	
23	PRESSURE GAUGE (2 1/2" DIA DIAL) 0 - 500 PSI	NO.	1	
24	COMPOUND GAUGE (2 1/2" DIA DIAL) (-)30" to 150 PSI	NO.	1	
25	PSYCHRO METER	NO.	1	
26	LOCK WITH KEY FOR TOOL BOX	NO.	1	
27	RATCHET 1/4"	NO.	1	
28	MS TOOL BOX	NO.	1	
29	Measuring tape	NO	1	
30	Tachometer	NO	1	
31	Double ended spanner	SET	1	
32	Gasket punch	NO.	1	
33	Centre punch	NO.	1	
34	Scissors for sheet metal cutting	NO.	1	
35	Multimeter	NO.	1	
36	Anemometer	NO.	1	
37	Slide wrench 8"	NO.	1	
38	Slide wrench 10"	NO.	1	
39	Slide wrench 6"	NO.	1	
40	Box spanner set	SET	1	

<b>GRAND TOTAL</b>	
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Note : ABOVE IS THE MINIMUM LIST. ANY OTHER TOOL / TACKEL REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION.

<b>ANNEXURE-B [Commissioning Spares]</b>				
<b>NAME OF PROJECT:</b>		<b>2 x 500MW TUTICORIN TPP-FGD SYSTEM</b>		
<b>NAME OF PACKAGE:</b>		<b>HVAC FOR FGD</b>		
<b>TECHNICAL SPECIFICATION:</b>		<b>PE-TS-483-(571-13000-A)-A001 (REV-0)</b>		
<b>S. N.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty</b>	<b>Total Ex-Works (INR)</b>
1	FAN BELTS	SET	1	
2	PRESSURE GAUGE	NO.	1	
3	TEMPERATURE GAUGE	NO.	1	
4	FILTER	SET	1	
5	COMPRESSOR OIL	Lot	1	
6	REFRIGERANT	Lot	1	
7	LUBRICANT (EACH TYPE)	Lot	1	
<b>GRAND TOTAL</b>				

NOTE :ABOVE IS THE MINIMUM LIST. ANY OTHER COMMISSIONING SPARE REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION.

**ANNEXURE-II DEVIATION SHEET (COST OF WITHDRAWAL)**

<b>PROJECT:-</b>						2 x 500MW TUTICORIN TPP-FGD SYSTEM			
<b>PACKAGE :-</b>						HVAC FOR FGD			
<b>TENDER ENQUIRY :-</b>						PE/PG/NTF/E-6776/2021 Dated 28.09.2021			
<b>NAME OF THE BIDDER</b>									
Sl. No.	Volume/Section	Page No.	Clause No.	Technical Specification/Tender Document No	Complete Description of Deviation	Cost of withdrawal of deviation to be entered by the bidder in	Reference of price Schedule of which Cost of Withdrawal of Deviation is applicable	Nature of cost of withdrawal of deviation (Positive/Negative)	Reasons for quoting deviation
1	<b>TECHNICAL DEVIATION</b>								
1.01									
1.02									
1.03									
1.04									
1.05									
1.06									
1.07									
1.08									
2	<b>COMMERCIAL DEVIATION</b>								
2.01									
2.02									
2.03									
2.04									
2.05									
2.06									
2.07									
2.08									

**NOTES:**

1. Cost of Withdrawal of deviation will be applicable on the basic price (i.e. excluding taxes, duties & freight) only.
2. All the bidders have to list out all their technical & commercial deviations (if any) in details in the above format.
3. Any deviation not mentioned above and shown separately or found hidden in offer, will not be taken cognizance of.
4. Bidder shall submit duly filled unpriced copy of above format indicating "quoted" in "cost of withdrawal of deviation" column of the schedule above along with their Techno-commercial offer, wherever applicable. In absence of same, such deviation(s) shall not be considered and offer shall be considered in total compliance to NIT.
5. Bidder shall furnish price copy of above format along with price bid.
6. The final decision of acceptance/ rejection of the deviations quoted by the bidder shall be at discretion of the Purchaser.
7. Bidders to note that any deviation (technical/commercial) not listed in above and asked after Part-I opening shall not be considered.
8. For deviations w.r.t. Credit Period, Liquidated damages, Firm prices if a bidder chooses not to give any cost of withdrawal of deviation loading as per Annexure-VII of GCC, Rev-07 will apply. For any other deviation mentioned in un-priced copy of this format submitted with Part-I bid but not mentioned in priced copy of this format submitted with Priced bid, the cost of withdrawal of deviation shall be taken as NIL.
9. Any deviation mentioned in priced copy of this format, but not mentioned in the un-priced copy, shall not be accepted.
10. All techno-commercial terms and conditions of NIT shall be deemed to have been accepted by the bidder, other than those listed in unpriced copy of this format.
11. Cost of withdrawal is to be given separately for each deviation. In no event bidder should club cost of withdrawal of more than one deviation else cost of withdrawal of such deviations which have been clubbed together shall be considered as NIL.
12. In case nature of cost of withdrawal (positive/negative) is not specified it shall be assumed as positive.
13. In case of discrepancy in the nature of impact (positive/ negative), positive will be considered for evaluation and negative for ordering.