



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT

PROJECT : 1X800 MW TANGEDCO NORTH CHENNAI ST. III BTG
PACKAGE : VENTILATION SYSTEM
TENDER ENQUIRY NO.: PE/PG/NC3/E-5781/2017 Dt. 28.11.2017.

DATE: - 27.12.2017

Corrigendum-04

In reference to the above mentioned tender enquiry for **VENTILATION SYSTEM** package please note the following.

1. Amendment#1 to the Technical Specification (Appended below)
2. Price format (Appended below) has been revised. Hence all bidders are requested to submit their price in Rev 01. Bidders who have submitted the offers are requested to submit revised offer as per price bid in Rev 01.
3. Reply of pre – bid queries (appended below).
4. Please ignore page no 3, 4 and 05 of corrigenda – 02.

All the other terms and conditions of the tender enquiry remain unchanged. All the bidders are requested to quote accordingly.

Bidders are requested to ensure submission of offer on or before due date i.e. 05.01.2018.

Regards

Vinit Kumar Verma
Dy. Mgr./ PG-BOP



1x800 MW NORTH CHENNAI TPS
ANNEXURE – A: CHANGES TO THE TECHNICAL SPECIFICATION

SPECIFICATION NO.: PE-TS-423-554-A001

VENTILATION SYSTEM

REV. NO. 00

DATE: 22/12/2017

Page 1 of 2

Following changes with respect to Technical Specification for **Ventilation System** BHEL's Technical specification no **PE-TS-423-554-A001, R01** shall apply.

For to note that existing clauses/details as appearing in the specification stands deleted and clauses/details as mentioned in "Modified to or Read as" column shall be applicable and complied by the bidder.

MODIFIED CLAUSES/PAGE NUMBERS.

Vol. No.	Section/Description	Clause no.	Page no	Existing clause/details	Modified to or Read as
IIB	SECTION– C1, SPECIFIC TECHNICAL REQUIREMENT	5.1	21 of 679	Air-washers for TG hall Four (4) Nos. sheet metal type Air washer units (AWU) having capacity 250000 M3/Hr each having minimum 95 mm WC static pressure for T.G. Hall.	Air-washers for TG hall Four (4) Nos. sheet metal type Air washer units (AWU) having capacity 300000 M3/Hr each having minimum 75 mm WC static pressure for T.G. Hall.
IIB	SECTION– C1, SPECIFIC TECHNICAL REQUIREMENT	5.1	22 of 679	Capacity of pump shall be 250 m3/hr and head 30 mmWC (approx.).	Capacity of pump shall be 300 m3/hr and head 30 mmWC (approx.).
IIB	SECTION– C1, SPECIFIC TECHNICAL REQUIREMENT	5.2	22 of 679	UAF for ESP building: One (1) Nos. Sheet metal type Unitary Air Filtration system (UAF) having cap. 1,10,000 CMH at minimum 80 mm WC static pressure shall be placed at roof of the ESP bldg..	UAF for ESP building: One (1) Nos. Sheet metal type Unitary Air Filtration system (UAF) having cap. 1,10,000 CMH at minimum 75 mm WC static pressure shall be placed at roof of the ESP bldg..
IIB	SECTION– C2A, CUSTOMER SPECIFICATION	2.1.10.7.1 (c)	47 of 679	Air washer shall be double bank spray type mainly consists..... pre and fine filters.....	Air washer shall be double bank spray type mainly consists..... pre filters..... "Fine filter for Air Washer and UAF is not applicable"
IIB	P&ID FOR AIR WASHER & UAF		667 & 668 OF 779		Instruments indicated in the P&ID is indicative. Any additional instrument required for the completeness of the system shall be in bidder scope. Further, bidder to follow clause no. 1.15, 1.16, 1.17 of page no. 447 of 679 for Instrument Redundancy.

[Signature]

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22/12/17

S K Bhamini

22/12/2017



1x800 MW NORTH CHENNAI TPS
ANNEXURE – A: CHANGES TO THE TECHNICAL SPECIFICATION

SPECIFICATION NO.: PE-TS-423-554-A001

VENTILATION SYSTEM

REV. NO. 00

DATE: 22/12/2017

Page 2 of 2

					PT to be provided at Air Washer and UAF pump discharge.
IIB	TECHNICAL SPECIFICATION SUGGESTIVE PRICE FORMAT, REV. 01		659 of 679	1. Annexure – I: S. No. 1: 250000 CMH. Each air washer has 2 no centrifugal fan (2 x 50% duty) of capacity 1,25,000 CMH at min. 95 mm SP. 2. Annexure – I, S. No. 2, UAF has 1 no centrifugal fan (1 x 100% duty) of capacity 110,000 CMH at min. 80 mm WC SP. 3. Annexure – III: Estimated power consumption (EPC) figure for the system (for working drives only) has been considered as 691 KW. 4. RE Units 50,000 CMH: 16 nos.	1. Annexure – I: S. No. 1: 300000 CMH. Each air washer has 2 no centrifugal fan (2 x 50% duty) of capacity 1,50,000 CMH at min. 75 mm SP 2. Annexure – I, S. No. 2, UAF has 1 no centrifugal fan (1 x 100% duty) of capacity 110,000 CMH at min. 75 mm WC SP. 3. Annexure – III: Estimated power consumption (EPC) figure for the system (for working drives only) has been considered as 810 KW 4. RE Units 50,000 CMH: 17 nos. 5. Annexure – II : Notes added

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22/12/2017



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT

Description	BHEL Reply
Kindly confirm the specification of Electric Motor Specification for Air Washer, UAV & Axial Fan.	"Electric Motor Specification for Air Washer, UAV & Axial Fan is available in Technical Specification, PE-TS-423-554-A001 (REV 01)".

	1x800 MW TANGEDCO NORTH CHENNAI TPP VENTILATION SYSTEM PRE-BID CLARIFICATION SCHEDULE		SPECIFICATION NO:PE-TS-423-554-A001	
			VOLUME: II	
			SECTION: 4	
			REV. NO. 00	DATE: 14th December 2017
		SHEET: of 		
PRE-BID CLARIFICATION SCHEDULE				
S. NO.	SECTION/CLAUSE/PAGE NO.	STATEMENT OF THE REFERRED CLAUSE	CLARIFICATION REQUIRED	
1	Sl.No. 15 of Price Format (Annexure-I)	Cable Tray, conduits, junction box..... Etc. as required for the complete system.	Kindly confirm the inclusion of the Field Instruments mentioned in the referred clause,as most of them are not been considered in our Air Washer & UAF units as per standard practice.	
2	Sl.No.22 of sub-section C1 & Clause No. 2.1.10.4.c.i), Vol-III, Sec-2, Page 41 of 679	Bidders shall carryout to maintain specified inside design Varies from 100% to 25%. Inside dry bulb temperature shall be for evaporative cooled areas.	We stand guarantee for the Performance of our Equipments but not inside condition of the premises. Since the adequacy of the capacities of the Equipments designed by the client not verified. However,in order to the verify the capacities of the same equipments - please furnish detail Drawings of the Premises along with internal loads.	
3	General		Kindly mention the battery limit of make up water connection of each Air washer Unit	

BHEL replies are as under:-

For sl. No. 1:- P&ID for Air washer and UAF are indicative. Instrumentation required for the completeness of the system shall be in bidder scope and shall be decided during detail engineering. Bidder to follow specification completely.

For sl. No. 2:- As per specification performance guarantees for system, equipment, inside design condition etc.. all are in bidder scope. Layout drawings are already part of technical specification. Heat dissipation data shall be provided during detail engineering.

For sl. No. 3:- Refer make up water scheme enclosed in Technical Specification.

	1x800 MW TANGEDCO NORTH CHENNAI TPP VENTILATION SYSTEM PRE-BID CLARIFICATION SCHEDULE		SPECIFICATION NO:PE-TS-423-554-A001	
			VOLUME: II	
			SECTION: 4	
			REV. NO. 00	DATE: 7th December 2017
			SHEET: of	
<u>PRE-BID CLARIFICATION SCHEDULE</u>				
S. NO.	SECTION/CLAUSE/PAGE NO.	STATEMENT OF THE REFERRED CLAUSE	CLARIFICATION REQUIRED	
1	Sl.No. 4.b) of Price Schedule	Motorized Actuator with single phase indicated lamps, etc.	Kindly confirm, whether motorized Actuator of single phase or 3 phase since customer specification indicates Motorized Actuator of 3 phase only. Where as in Price schedule under sl no 4.b) indicates 1 ph Actuator only.	
2	Clause No.2.1.10.7.1 (c), Volume-II Section-2, Page no. 47 of 679	Air Washer shall be double bank spray type mainly In the Air Washer Plant Room	The internals Air Washer contain Pre & Fine Filter both whereas PID indicated only one layer of Filter.Kindly confirm	
3	Clause No.2.1.10.8.15, Volume-II Section-2, Page no.63 of 679	Axial & Propeller fans shall have single piece cast aluminium impeller with blades of aerofoil design The same shall be spray or hot dip galvanized.	Single piece cast aluminium constructed propeller fans are not available in the market. Only MS fabricated Impeller will be available and the same items we have supplied in our earlier BHEL projects. Kindly confirm .	
4	Refer PID for Air Washer & UAF and page 454 of 679		Please confirm No. & type of instruments will be considered as per PID. Since there is lot of confusions in the different clauses of specification, like clause No. 2.3.3.1 - General requirement, chapter-III under technical specification (C&I)	
5	Refer PID for UAF and page 42 of 679 vol-II Sec 2		Double bank spray arrangement is shown in PID where as in the specification of UAF indicates single bank spray arrangement. Please confirm which one is correct. If it is double bank please confirm the design criteria of circulating water quantity.	
6	Refer Annexure-III of Price Schedule		Kindly provide the correct sheet of Guaranteed Power Consumption (GPC) under the same Annexure.	
7	Clause No.2.1.10.4.j, Page No.42 of 674	Circulating waterfor UAF, it shall be min. 0.6 cu.m/1000 of air flow whereasefficiency of UAF is 90%	Please confirm.	Air to water ratio for UAF shall be 1000:1. Saturation Efficiency of UAF shall be 90%
8	Clause No.2.1.10.7.1.(c), Page No.46 of 674	Aie Washer shall be Pre & Fine Filter	Please confirm.	Fine filter is for Air Washer is not applicable.

	1x800 MW TANGEDCO NORTH CHENNAI TPP		SPECIFICATION NO:PE-TS-423-554-A001	
	VENTILATION SYSTEM		VOLUME: II	
	PRE-BID CLARIFICATION SCHEDULE		SECTION: 4	
			REV. NO. 00	DATE: 7th December 2017
			SHEET: of	
PRE-BID CLARIFICATION SCHEDULE				
S. NO.	SECTION/CLAUSE/PAGE NO.	STATEMENT OF THE REFERRED CLAUSE	CLARIFICATION REQUIRED	
9	Sl.No.6 under Sub-section-C1, Page No. 27 of 674 of Specific requirement	Design margin shall be maintain as follows: For Fan a)Head-20% b)Flow-20% For Pump a)Head-20% b)Flow-15%	Kindly confirm the design margin for fan & pump shall be 20% against head and 20% against flow would be simultaneously or either of eac. which will be far larger model from the designated capacity as per the specification. Bidder to follow specification.	
10	Mandatory Spare List Sl.No.v.2) &vi) of sub-section:E, Sheet 3 of 4, Page 617 of 679	Sl.No v.2)Ten (10) percent of total number of condensate pots size installed. Sl.No vi) Bidder to supply 10% or 1 no. (whichever is more) of each type of sensor/instrument non nucleonic density transmitter etc.	Items indicated in the referred clause and sl Nos are totally irrelevant and not applicable for the system we are quoting for. Hence it would not be possible for us to quote. Kindly confirm your acceptance. Applicability of spares shall be decided during detail engineering. Bidder to note that any item which is "not quoted" in the Mandatory Spare list and is found to be "applicable" at a later date shall be supplied by the Vendor without any extra cost. Bidder to quote accordingly.	
11	Page No.68 of 679 , Sl.No. 10,11,12, 13...	... welding socket, Special Requirement, etc...	Kindly specify the scope of supply and is it relevent to the system ?	
12	Price Schdule of Tender Document	Clause no 10, 11 (a) and 12 mentioned in page no 68 of 679 are for vendor information and not in scope. Junction box is in bidder scope as per Electrical Scope matrix page no. 334 of 679	Please provide Excel Sheet of Price Schedule Please Refer Rev 01 in pdf	
13	Annexure-II ,page no 617 of 679		There is no List of mandetory spares against particular Annexure and page. Pl.furnish. Mandatory Spare are given under Annexure-II of the price format.	

PRICE FORMAT REV 01 FOR INDIAN BIDDERS (Annexure-A)					Doc No:	PE-PF-425-166-A001								
					Rev No:	1								
					Date of issue	07.11.2017								
NAME OF PROJECT:					1X800 MW TANGEDCO NORTH CHENNAI ST. III BTG									
NAME OF PACKAGE:					VENTILATION SYSTEM									
TECHNICAL SPECIFICATION:					PE-TS-423-554-A001									
ENQ. NO					PE/PG/INC3/E-5781/2017 Dt. 28.11.2017									

Notes

- 1.PRICES SHALL BE FIRM UNLESS OTHERWISE SPECIFICALLY INDICATED IN NIT .
2. CGST/SGST/UGST/IGST shall be paid at actuals against documentary evidence subjected to the maximum of GST corresponding to above HSN/SAC code.
3. In case, any GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry to timeline prescribed in the relevant Act for availing such ITC, or any other reasons not attributable to BHEL, tax amount shall be recoverable from the vendor/contractor
4. All taxes and duties other than CGST/SGST/UGST/IGST shall be deemed to be included in the Ex-Works prices unless specified otherwise by the bidder in the price bid. No variation in other taxes and duties shall be payable by Purchaser.
5. Evaluation shall be done one the basis of total lump sump prices for complete supply and services but excluding GST.
6. Vendor to quote prices in words also.
- 7.Nature of GST on Services at project site shall not be allowed to change after bidding.

Particulars of bidder / authorised representative

Name	Designation	Signature	Date	Company Seal

PRICE FORMAT REV 01 FOR FOREIGN BIDDERS (Annexure-B)					Doc No:	PE-PF-423-554-A001														
					Rev No:	1														
					Date of issue	13.11.17														
NAME OF PROJECT:				1X800 MW TANGEDCO NORTH CHENNAI ST. III BTG																
NAME OF PACKAGE:				VENTILATION SYSTEM																
TECHNICAL SPECIFICATION:				PE-TS-423-554-A001																
ENQ. NO				PE/PG/NC3/E-5781/2017 Dt. 28.11.2017																
								Imported content				Indigenous content				E&C			Grand Total(Foreign currency + Indian currency)	
S. No.	DESCRIPTION			UNIT	QTY	HSN Code / Service Activity No	Unit C & F - PRICE (Currency)	Total C & F - PRICE (Currency)	Custom Duty (..%) after availing input tax credit (INR)	Inland Freight (INR)	Total (Foreign currency + Indian currency)	Unit Ex-works (INR)	Total Ex-works (INR)	Type of GST (IGST/CGST + SGST/UTGST)	Freight (INR)	Total for Indigenous content (INR)	Unit E & C (incl. PG test, Demo. Test charges, etc.)	Total E & C (incl. PG test, Demo. Test charges, etc.)		Type of GST (IGST/CGST + SGST/UTGST)
1	2			3	4	5	6	7=4*6	8	9	10=7+8+9	11	12	13	14	15=12+14	16	17=16*4	18	19=10+15+18
1.0	Total lump sum firm price inclusive of all prevailing taxes, duties and other levies for Supply part, Services part and Mandatory spares 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, mandatory spares alongwith spares for erection, startup 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, preperation of layout drawings 3D (as applicable) and carrying out Performance guarantee / Functional / Demonstration tests at site (As applicable), training of customer / client O&M staff 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.			Lot	1															
2	MAJOR BREAK-UP OF PRICES GIVEN IN 1.0 ABOVE.																			
2.1	Total lump sum firm price inclusive of all prevailing taxes, duties and other levies for Supply part 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 alongwith spares for erection as required, startup and commissioning spares as required, forwarding, proper packing, shipment and delivery at site, preperation of layout drawings 3D (as applicable) for the total scope defined as per BHEL NIT & tender technical specification as specified above, amendment & agreements till placement of order. (Break-up as per Annexure-I)			Lot	1	8414 59 30												NA		
2.2	Total lumpsum firm prices inclusive of all prevailing taxes, duties and other levies for Services part 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 customer/client O&M staff 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. (Break-up as per Annexure-I)			Lot	1	995463				NA										
2.3	Total lumpsum firm price inclusive of all prevailing taxes, duties and other levies for Mandatory spares comprising of manufacture, fabrication, assembly, inspection / testing (as applicable) at vendor's & sub-vendor's works, painting, forwarding, proper packing, shipment, delivery at site & guarantee as per tender technical specification above, amendment & agreements till placement of order. (Price break up of mandatory spares is to be furnished as per Annexure- II)			Lot	1	8414 90 90												NA		

PRICE FORMAT REV 01 ANNEXURE - I PRICE BREAKUP (FOR MAIN PLANT, ESP AND OTHER AUX BUILDINGS)		Doc No:		PE-PF-423-554-A001			
		Rev No:		1			
		Date of issue		Nov-17			
NAME OF PROJECT:		1X800 TANGEDCO NORTH CHENNAI TPP					
NAME OF PACKAGE:		VENTILATION SYSTEM					
TECHNICAL SPECIFICATION No:		PE-TS-423-554-A001					
ENQ NO		PE/PG/NC3/E-5781/2017 Dt. 28.11.2017					
				Supply		E&C	
SL NO	DESCRIPTION OF EQUIPMENT/ ITEM	Qty	UNIT	Unit Ex-works duly packed (INR) / Unit C&F	Total Ex-works duly packed (INR) / Unit C&F	Unit E&C Price (INR) / Unit C&F	Total E&C Price (INR) / Unit C&F
1	2	3	4	5	6=3*5	5	6=3*5
1	Sheet metal type air washer unit with centrifugal fan (DIDW) with motor, pumps with motors, filters, air washer internals, inlet air louvers, piping as per IS:1239, Part-I (heavy class galvanised), valves, nozzles, back wash arrangement, galvanised drain piping, etc as per specification of capacity 300000 CMH. Each air washer has 2 no centrifugal fan (2 x 50% duty) of capacity 1,50,000 CMH at min. 75 mm SP. Each centrifugal fan shall be provided with VFD driven motor alongwith VFD and other accessories as required for VFD shall also be included in the price.	4	NO				
2	Unitary air filtration unit with centrifugal fan with motor, pumps with motors, filters, UAF internals, inlet air louvers, piping as per IS: 1239 pt I (heavy class galvanised), valves, nozzles, back wash arrangement, galvanised drain piping etc. as per specification of capacity 110,000 CMH. Each UAF has 1 no centrifugal fan (1 x 100% duty) of capacity 110,000 CMH at min. 75 mmWC SP. Each centrifugal fan shall be provided with VFD driven motor alongwith VFD and other accessories as required for VFD shall also be included in the price.	1	NO				
3*	Supply air ducting (finished) for above area complete with dampers, grills (with VCD & without VCD), supports (painted) and all accessories as specified.						
3.1*	Finished GSS (zinc coating 275 gms/sq.m) Ducting with support structure etc.						
a)*	18 G	2500	SQM*				
b)*	20 G	2700	SQM*				
c)*	22 G	2700	SQM*				
d)*	24 G	3500	SQM*				
3.2*	MS Duct With Epoxy paint for battery room.	200	SQM*				
3.3*	Extruded Aluminium Grilles with VCD	100	SQM*				
3.4*	Extruded Aluminium Grilles without VCD	8	SQM*				
3.5*	Thermal insulation alongwith finish as per specification for supply air duct	1000	SQM*				
3.6*	Wall mounted dampers (gravity operated) for different areas.	30	SQM*				
3.7*	Inlet Louvres	50	SQM*				
3.8*	VOLUME CONTROL DAMPERS in GI construction as per specifications	20	SQM*				
4*	FIRE DAMPER						
a)*	Fire damper	20	SQM*				
b)*	Motorized Actuator with single phase power supply for the above Fire damper with auto resetting, limit switches, indication lamps etc	25	NO*				
c)*	Fusible Link type Fire Damper	5	SQM*				
5*	Roof extractor units (axial flow type) with hood, disconnect switch and all accessories as specified. Following fan shall have 15 mmwc static pressure.						
a)*	Capacity 50,000 CMH with Motor rating 5.5 KW	24	Nos.*				
b)*	Capacity 40,000 CMH with Motor rating 5.5 KW	5	Nos.*				
c)*	Capacity 20,000 CMH with Motor rating 2.2 KW	2	Nos.*				
6*	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 and all other accessories (suitable for 415V/3-phase supply). Following fan shall have 32 mmwc static pressure.						

PRICE FORMAT REV 01 ANNEXURE - I PRICE BREAKUP (FOR MAIN PLANT, ESP AND OTHER AUX BUILDINGS)		Doc No:		PE-PF-423-554-A001			
		Rev No:		1			
		Date of issue		Nov-17			
NAME OF PROJECT:		1X800 TANGEDCO NORTH CHENNAI TPP					
NAME OF PACKAGE:		VENTILATION SYSTEM					
TECHNICAL SPECIFICATION No:		PE-TS-423-554-A001					
ENQ NO		PE/PG/NC3/E-5781/2017 Dt. 28.11.2017					
				Supply		E&C	
SL NO	DESCRIPTION OF EQUIPMENT/ ITEM	Qty	UNIT	Unit Ex-works duly packed (INR) / Unit C&F	Total Ex-works duly packed (INR) / Unit C&F	Unit E&C Price (INR) / Unit C&F	Total E&C Price (INR) / Unit C&F
a)*	Capacity 10,000 CMH with Motor rating 2.2 KW	4	Nos.*				
b)*	Capacity 7,500 CMH with Motor rating 1.5 KW	4	Nos.*				
c)*	Capacity 6,000 CMH with Motor rating 1.1 KW	10	Nos.*				
d)*	Capacity 4,000 CMH with Motor rating 0.75 KW	6	Nos.*				
7*	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 and all other accessories (suitable for 415V/3-phase supply) as specified. Following fan shall have 20 mmwc static pressure.						
a)*	Capacity 10,000 CMH with Motor rating 1.5 KW	8	Nos.*				
b)*	Capacity 7,500 CMH with Motor rating 1.1 KW	8	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.*				
8*	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 and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 15 mmwc static pressure.						
a)*	Capacity 15,000 CMH with Motor rating 2.2 KW	6	Nos.*				
b)*	Capacity 10,000 CMH with Motor rating 1.5 KW	5	Nos.*				
c)*	Capacity 7,500 CMH with Motor rating 1.1 KW	12	Nos.*				
d)*	Capacity 4,000 CMH with Motor rating 0.75 KW	2	Nos.*				
e)*	Capacity 2,000 CMH with Motor rating 0.55 KW	6	Nos.*				
9*	Axial flow exhaust fans (Wall mounted) complete with casing, TEFC sq cage induction motor & mounting frame, MS rain protection cowl, bird screen and all other accessories epoxy painted (suitable for 415V/3-phase supply) as specified. Following fan shall have 10 mmwc static pressure.						
a)*	Capacity 15,000 CMH with Motor rating 1.1 KW	6	Nos.*				
b)*	Capacity 10,000 CMH with Motor rating 0.75 KW	6	Nos.*				
c)*	Capacity 7,500 CMH with Motor rating 0.55 KW	20	Nos.*				
d)*	Capacity 6,000 CMH with Motor rating 0.55 KW	6	Nos.*				
e)*	Capacity 4,000 CMH with Motor rating 0.55 KW	2	Nos.*				
f)*	Capacity 2,000 CMH with Motor rating 0.37 KW	5	Nos.*				
10*	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). Following fan shall have 5 mmwc static pressure.						
a)*	Capacity 1200 CMH with Motor rating 100 watts	60	Nos.*				
11*	Handling arrangement for ventilation equipments						
(a)*	Manually operated, platform trolley of 1 Ton capacity with base area 2m x 1.5m	2	NO*				
(b)*	1T Chain pulley block	2	NO*				
(c)*	1T Chain pulley block with travelling trolley	2	NO*				
12*	Online Non chemical scale preventer, with all accessories for as required to meet system requirements						
a*	For a combination of two Air washer placed at A row and BC bay	2	NO*				
b*	For a combination of two UAF	1	NO*				

PRICE FORMAT REV 01 ANNEXURE - I PRICE BREAKUP (FOR MAIN PLANT, ESP AND OTHER AUX BUILDINGS)		Doc No:		PE-PF-423-554-A001			
		Rev No:		1			
		Date of issue		Nov-17			
NAME OF PROJECT:		1X800 TANGEDCO NORTH CHENNAI TPP					
NAME OF PACKAGE:		VENTILATION SYSTEM					
TECHNICAL SPECIFICATION No:		PE-TS-423-554-A001					
ENQ NO		PE/PG/NC3/E-5781/2017 Dt. 28.11.2017					
				Supply		E&C	
SL NO	DESCRIPTION OF EQUIPMENT/ ITEM	Qty	UNIT	Unit Ex-works duly packed (INR) / Unit C&F	Total Ex-works duly packed (INR) / Unit C&F	Unit E&C Price (INR) / Unit C&F	Total E&C Price (INR) / Unit C&F
13	Total lumpsum price for special tools & tackles for maintenance inclusive of packing forwarding, transportation up to site, etc. (Bidder shall submit item-wise price break-up).	1	LOT			NA	
14	Total lumpsum price for commissioning spares inclusive of packing forwarding, transportation up to site, etc. (Bidder shall submit item-wise price break-up).	1	LOT				
15	Cable tray, condutes, junction box, Local control panel and Field instruments like pressure gauge, temperature gauge, temperature and pressure transmitters, DP transmitters, flow transmitters, flow indicator, etc. as required for the complete system	1	LOT				
	Total						

Notes

- 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 Any other item not indicated above, but required to make the system complete in all respects, as per the technical specification, shall be supplied without any cost implication to BHEL.

Particulars of bidder / authorised representative

Name	Designation	Signature	Date

PRICE FORMAT REV 01 APPENDIX-A Special tools & tackles for maintenance				Doc No:	PE-PF-423-554-A001
				Rev No:	1
				Date of issue	Nov-17
NAME OF PROJECT:		1X800 TANGEDCO NORTH CHENNAI TPP			
NAME OF PACKAGE:		VENTILATION SYSTEM			
TECHNICAL SPECIFICATION No:		PE-TS-423-554-A001			
ENQ NO		PE/PG/NC3/E-5781/2017 Dt. 28.11.2017			
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-works duly packed (INR) / Unit C&F	Total Ex-works duly packed (INR) / Unit C&F
1	2	3	4	5	6=4*5
1	Measuring tape	NO	1		
2	Tachometer	NO	1		
3	Double ended spanner	SET	1		
4	Ring spanners	SET	1		
5	Gasket punch	NO.	1		
6	Center punch	NO.	1		
7	Hammer with wooden handles	NO.	1		
8	Scissors for sheet metal cutting	NO.	1		
9	Torch light (suitable for 2 cells)	NO.	1		
10	Multimeter	NO.	1		
11	Anemometer	NO.	1		
12	Compound pressure gauge	NO.	1		
13	Slide wrench 8"	NO.	1		
14	Slide wrench 10"	NO.	1		
15	Slide wrench 6"	NO.	1		
16	Box spanner set	SET	1		
17	Screw driver set	SET	1		
18	Align key set	SET	1		
19	MS tool box	NO	1		
TOTAL					
Notes					
1	ABOVE IS THE MINIMUM LIST. ANY OTHER TOOL / TACKEL REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION.				
Particulars of bidder / authorised representative					
	Name	Designation	Signature	Date	Company Seal

PRICE FORMAT REV 01 APPENDIX-B Commissioning spares				Doc No:	PE-PF-423-554-A001
				Rev No:	1
				Date of issue	Nov-17
NAME OF PROJECT:				1X800 TANGEDCO NORTH CHENNAI TPP	
NAME OF PACKAGE:				VENTILATION SYSTEM	
TECHNICAL SPECIFICATION No:				PE-TS-423-554-A001	
ENQ NO				PE/PG/NC3/E-5781/2017 Dt. 28.11.2017	
SL NO	DESCRIPTION	UNIT	Qty	Unit Ex-works duly packed (INR) / Unit C&F	Total Ex-works duly packed (INR) / Unit C&F
1	2	3	4	5	6=4*5
1	FAN BELTS	SET	1		
2	PRESSURE GAUGE	NO	1		
3	TEMPERATURE GAUGE	NO	1		
4	FILTER	SET	1		
TOTAL					
NOTES					
1	ABOVE IS THE MINIMUM LIST. ANY OTHER COMMISSIONING SPARE REQUIRED FOR THE SYSTEM SHALL ALSO BE PROVIDED BY THE VENDOR WITHOUT ANY COST IMPLICATION.				
Particulars of bidder / authorised representative					
	Name	Designation	Signature	Date	Company Seal

PRICE FORMAT REV 01 ANNEXURE - II LIST OF MANDATORY SPARES		Doc No:	PE-PF-423-554-A001		
		Rev No:	1		
		Date of issue	Nov-17		
NAME OF PROJECT:		1X800 TANGEDCO NORTH CHENNAI TPP			
NAME OF PACKAGE:		VENTILATION SYSTEM			
TECHNICAL SPECIFICATION No:		PE-TS-423-554-A001			
ENQ NO		PE/PG/NC3/E-5781/2017 Dt. 28.11.2017			
S. No.	Description	UNIT	Qty	Unit Ex-works duly packed (INR) / Unit C&F	Total Ex-works duly packed (INR) / Unit C&F
1	2	3	4	5	6=4*5
A	C&I portion				
	The quantity of following spares includes a minimum of 20 % spares for replacement of each type of lamps, PBs, ILPBs, fuse, MCB, MCCB used in the equipment/system offered by him even if this is not detailed below.				
i)	Measuring Instruments - Indicators, Recorders, Electrical Metering and Skid Mounted Instruments	Lot	1		
1	10% of the number of indicators, recorders and meters offered from each model for the project or a minimum of one number per model, whichever is more. These instruments shall be supplied with three sets of blank scales.				
2	For skid mounted instruments (if any) - 10% of total number of instruments for each model and type for the project or a minimum of one number for each model and type, whichever is more.				
ii)	Temperature Elements and Thermowells	Lot	1		
1	10% spare thermocouple/RTD elements, suitable for replacement for each type and length of element furnished with thermocouple/RTD assemblies, or a minimum of one number of each type & length, whichever is more.	%	10%		
2	10% thermo wells for each type of temperature sensors or a minimum of one for each type, whichever is more	%	10%		
3	Temperature Transmitters and Electronic Transmitters (For Pressure, DP, Temp, Flow, Level), Temperature, Pressure, Flow & Level Switch, safety switches, Gauges, meters, Transducer or any other instrument etc.				
	10% of total number of instruments/transducers offered for each model and type for the project or a minimum of one number, whichever is more.	Lot	1		
iii)	Relay Based Control Panels	Set	1		
1	10% LEDs for indicating lights shall be furnished.				
2	Three times, the one hundred percent (300% of installed) spare replacement control circuit fuses/MCB/MCCB of each current rating required shall be furnished.				
3	20% spare replacement relays modules & contactors of each type.				
iv)	Alarm Annunciation System	Set	1		
1	20% spares of each type installed shall be provided for logic modules, group card modules, power supply modules, Hooters and any other electronic module.				
2	5% spares of each size shall be provided for un-engraved window boxes complete with LED etc.				
3	20% of installed LEDs for annunciation facia windows and LEDs box assemblies offered for the project shall be provided as mandatory spares.				
4	One (1) spare annunciator hooter of each type.				
v)	Erection hardware	Set	1		

PRICE FORMAT REV 01 ANNEXURE - II LIST OF MANDATORY SPARES		Doc No: PE-PF-423-554-A001			
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NAME OF PROJECT:		1X800 TANGEDCO NORTH CHENNAI TPP			
NAME OF PACKAGE:		VENTILATION SYSTEM			
TECHNICAL SPECIFICATION No:		PE-TS-423-554-A001			
ENQ NO		PE/PG/NC3/E-5781/2017 Dt. 28.11.2017			
S. No.	Description	UNIT	Qty	Unit Ex-works duly packed (INR) / Unit C&F	Total Ex-works duly packed (INR) / Unit C&F
1	2	3	4	5	6=4*5
1	Ten (10) percent of each type & Size installed instrument valve, manifold for each type, rating, model number and size of devices supplied for the project.				
2	Ten (10) percent of total number of condensate pots or four numbers whichever is higher of each type & Size installed.				
3	Ten (10) percent of each type & Size installed Fittings				
vi)	Bidder to supply 10% or 1 no. (whichever is more) of each type of sensor/instrument, analyzers /special instruments/Electronic card, instrumentation/mechanical fittings etc. for any other electronic system, feeder control cabinets, hydra step (EWLI), Vibration Monitoring System, CCTV, C&I Lab Instruments, On line Carbon in Ash analyzer system, On line Coal mass flow/speed easurement system, On line secondary air flow measurement system Mass Flow meter, Solid flow meter, 3 D Acoustic type level transmitters, Nucleonic & non nucleonic density transmitter etc.				
B	Electrical portion				
1	415V Motors				
1.1	Terminal plates	Nos.	10 Nos. each for small motors upto 30 KW & 4 Nos. each for more than 30 KW		
1.2	Heaters	Set	2 sets		
1.3	Greasing arrangements	Set	4 sets each type of motor		
1.4	Motor of each type and rating	Nos.	10% of the installed quantity or minimum 1 number whichever more		
1.5	Bearings (DE and NDE) for each type and rating of motor	Set	4 set		
TOTAL					
NOTE					
1	Mandatory spares listed above is bare minimum requirement. In case any additional mandatory spares requirement is covered elsewhere in the tender				
Particulars of bidder / authorised representative					
	Name	Designation	Signature	Date	Company Seal

PRICE FORMAT REV 01 ANNEXURE - III Guaranteed Power Consumption For Ventilation System				Doc No:	PE-PF-423-554-A001	
				Rev No:	1	
				Date of issue	Nov-17	
NAME OF PROJECT:		1X800 TANGEDCO NORTH CHENNAI TPP				
NAME OF PACKAGE:		VENTILATION SYSTEM				
TECHNICAL SPECIFICATION No:		PE-TS-423-554-A001				
ENQ NO		PE/PG/NC3/E-5781/2017 Dt. 28.11.2017				
S.NO.	DESCRIPTION OF EQUIPMENT	NO OF EQUIPMENT		TOTAL GUARANTEED POWER CONSUMPTION FOR EACH	DUTY FACTOR	TOTAL KW
		WORKING	STANDBY			
1	2	3A	3B	4	5	6=3Ax4x5
1	VENTILATION SYSTEM FOR TG BUILDING					
1.1	Centrifugal Fan of air washers.	8	0		1	
1.2	Pumps for circulation of water in spray chamber of above air washer	4	4		1	
1.3	RE Units 50,000 CMH	17	0		1	
1.4	Centrifugal Fan of UAF for ESP bld.	1	0		1	
1.5	Pump for above UAF.	1	1		1	
		TOTAL (KW)				
Note:	Estimated power consumption (EPC) figure for the system (for working drives only) has been considered as 810 KW. So long bidder's quoted guaranteed power consumption (GPC) above remains within this EPC, there will be no technical loading of bid on power consumption for evaluation. However, if bidder's quoted GPC exceeds EPC, there shall be technical loading of bid for evaluation @ Rs 588401/- per KW of additional power over EPC. Bidder's guaranteed power consumption at motor input terminals (not shaft power) as furnished in relevant schedule shall be demonstrated by the successful bidder during performance testing at works/ site. In case power consumption is noted higher than EPC / bidder's quoted GPC whichever is higher, during inspection/ PG test, penalty @ Rs 588401/- per KW shall be levied on vendor.					
Particulars of bidder / authorised representative						
	Name	Designation	Signature	DATE	Company Seal	