

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

**TECHNICAL ENQUIRY SPECIFICATION FOR
VENTILATION SYSTEM & AIR CONDITIONING (VAC) PACKAGE FOR
CHP & AHP**

	Prepared By	Checked by	Approved by
Mechanical	R Ragavan & Jishnu V	Amit Gupta	R S Pujari
Electrical	R K Majhi		K Balsamy

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

CONTENTS

CI.No.	DESCRIPTION	SHEET No.		
A.	PROJECT INFORMATION	03	Of	16
B.	BROAD SCOPE	04	Of	16
C.	OTHER IMPORTANT POINTS	07	Of	16
D.	ELECTRICAL SCOPE	10	Of	16
E.	DOCUMENTS TO BE FURNISHED ALONG WITH THE BID	14	Of	16
F.	EXCLUSIONS	15	Of	16
G.	LIST OF ENCLOSURES	15	Of	16

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

A. PROJECT INFORMATION:

1. Location & Land Availability:

The proposed unit of 1 X 250 MW will be installed on the western side of existing 2 X 60 MW units within the boundary of Rourkela Steel Plant in Sundergarh district of Orissa. Approximately 80 acres of land is available for construction of main plant and accessories. Presently most of land is filled with blast furnace slag. The main power house building of proposed unit of 1 x 250 MW will be located on western side of existing 2 x 60 MW switch yard. The indicative latitude & longitude of the proposed site is as follows:

Latitude: 22°13'19" N, Longitude: 84°53'51" E

2. Availability of Infrastructure Facilities

Road - The site is connected by road of NH-23 through a link road from a road junction at Panposh located approx. 10 KM from proposed site.

Railway siding - The nearest railway station Rourkela is situated about one km from the proposed plant site. A new railway siding will be developed for receiving coal from the source.

Airport/Air strip - The nearest airport is at Ranchi which is about 170 KM by rail and 225 KM by road from the proposed site.

Seaport - The nearest seaport is at Paradip (Orissa) which is around 400 Kms from the proposed site.

3. Climatological Data

The following meteorological data shall be taken into account for design of plant and equipment. Site conditions shall be assumed to be as follows for tender purpose.

1. Average elevation above mean sea level: 194m

2. Barometric pressure: 983 mb

3 The following ambient air parameters shall be assumed for designing the Air conditioning and Ventilation systems:-

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

	Summer	Monsoon	Winter
Air conditioning			
Dry Bulb Temperature (0C)	47	35	12
Relative Humidity, %	35	95	30
Ventilation			
Dry Bulb Temperature (0C):	47	35	-
Relative Humidity, %	35	95	-

4. Annual Average Rainfall: 2656.6 mm

5. Heaviest in 24 Hrs. 257.8 mm

6. Seismic Zone: Zone-II (As per latest Revision of IS 1893 /2002) Part-I

B. SCOPE OF THIS PACKAGE BIDDER:

It is not the intent to list out complete scope hereunder. However broad scope shall include but not limited to the following:

BROAD SCOPE OF SUPPLY:

Sl no	Item description	Quantity	Remarks
Design, Manufacturing, Supply, Inspection, Testing, Painting & Packing of			
1	Complete mechanical dry ventilation (push pull) system in all underground buildings and tunnels along with associated Electricals, C&I for CHP	1 lot	As per the approved Design Basis report for Ventilation system-CHP-Document Number:- IS-4-DB-708-111-M149, Rev-02
2	Complete dry type Pressurized ventilation system for all the CHP MCC rooms along with associated Electrical, C&I items	1 lot	
3	Complete dry type exhaust ventilation system for battery rooms and toilets in CHP MCC along with associated Electrical, C&I items	1 lot	
4	Complete dry type exhaust ventilation system for bunker bay along with associated Electrical, C&I items	1 lot	
5	Complete ventilation system AHP Compressor cum Ash water Pump house along with associated Electrical, C&I items	1 lot	As per the document Design Basis,

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

6	Complete ventilation system for HCSD pump house along with associated Electrical, C&I items	1 lot	Calculations for Ventilation System (AHP)- Document Number:- IS-4-DC-708-300-M033
7	Complete ventilation system for ash slurry pump house along with associated Electrical, C&I items	1 lot	
8	Complete ventilation system for AHP MCC-1 along with associated Electrical, C&I items	1 lot	
9	Complete ventilation system for Battery room-1 along with associated Electrical, C&I items for AHP MCC -1 room	1 lot	
10	Complete ventilation system for toilet rooms for AHP MCC room along with associated Electrical, C&I items	1 lot	
11	Complete ventilation system for AHP MCC-2 along with associated Electrical, C&I items	1 lot	
12	Complete ventilation system for Battery room-2 along with associated Electrical, C&I items for AHP MCC-2 room	1 lot	
13	Complete Air cooled type Packaged Air conditioning system for CHP control room along with associated Electrical, C&I items	1 lot	Bidder to decide the capacity/TR required for the air conditioning system based on the heat loads and building details furnished along with the tender
14	Complete Air cooled type Packaged Air conditioning system for AHP control room along with associated Electrical, C&I items	1 lot	
15	Complete Air cooled type Packaged Air conditioning system for wagon tippler control room along with associated Electrical, C&I items	1 lot	
16	Complete Split type AC system for RIO room of WT MCC, CH MCC, TP-5 MCC, AHP MCC-1 and AHP MCC-2 along with associated Electrical, C&I items	1 lot	
17	Complete exhaust ventilation system (dry type) for dust suppression pump house in CHP (optional price)	1 lot	

BROAD SCOPE OF SERVICES:

SI no	Item description	Quantity	Remarks
1	Transportation of items from works to site, supervision of unloading and movement to closed & open storage, carrying out activities like movement to erection location, erection, trial run and commissioning of entire CHP & AHP ventilation and air conditioning system (complete mechanical, electrical and C&I)	1 lot	
2	Carrying out Performance Guarantee testing	1 lot	

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

1. Scope for this package bidder shall include design, supply and erection & commissioning of ventilation and air conditioning system complete with drives, electrics and C&I system as per enclosed NSPCL NIT specifications and other minutes of meeting and record notes of discussion as enclosed with this specification.

Design: Includes basic engineering, detailed engineering, preparation and submission of engineering & civil assignment drawings, ducting layouts, calculations/ datasheets/ quality assurance documents/ field quality plans, as built drawings, commissioning procedures, operation & maintenance manuals, Performance Guarantee test procedures and obtaining approval from NSPCL /MECON/BHEL.

Supply: Includes manufacturing/ fabrication, shop floor testing, stage inspections, final inspections, shop floor painting, packing & transportation to site, customs clearance/ port clearance and any other statutory clearances, receipt and unloading at site.

Erection and Commissioning: Includes site handling, shifting to erection location, erection & commissioning, trial operation, preparation of protocols and getting signed from end customer, final painting at site after erection, carrying out Performance Guarantee Tests and handing over to NSPCL until satisfactory completion and written confirmation from NSPCL.

2. Bidder to refer the following documents for system design:
 - a) Design Basis report for Ventilation system-CHP- Document Number:- IS-4-DB-708-111-M149, Rev-02
 - b) Calculations for Ventilation System (AHP)- Document Number:- IS-4-DC-708-300-M033

Bidder to note that the capacities and other parameters mentioned in these documents are the minimum required value. In case the bidder feels, higher parameters are required, the same shall be brought out during tendering stage itself. During detailed engineering, no claims shall be entertained and accepted on account of higher sizing requirement arising to meet the satisfactory system performance.
3. Bidder's scope shall also include supply of start-up & commissioning spares.
4. Bidder shall also furnish the list of recommended spares along with the offer.
5. Bidder shall submit a signed copy of BHEL's tender enquiry specification with all enclosures along with the technical offer without any deviations.
6. Bidder shall submit complete drive schedule including motor ratings for all the equipment in this package without which the bidder's offer shall not be considered for evaluation.
7. Complete detail engineering drawings, ducting layouts, calculations, selection of components etc. shall be reviewed & subject to approval of BHEL / MECON /NSPCL during detail engineering.

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

8. Successful bidder shall take prior approval from BHEL while placing the E&C order for this package to their sub-contractor. BHEL reserves the right to disapprove/reject any such E&C contractor which BHEL deems not fit for executing E&C for this contract.
9. Bidder's scope shall also include supply and filling of consumables till final handing over to NSPCL.
10. During trial operation of plant, all equipment should run for a minimum period of 72 hours during which the equipment including stand-by shall at its rated capacity. All PG test parameters of end customer shall be complied by bidder without any price implication to BHEL.
11. Painting scheme shall be submitted by bidder in line with NSPCL NIT and the same shall be subject to approval of NSPCL/ MECONS. Final approved painting scheme shall be followed by bidder without any price implication to BHEL.
12. Special tools and tackles if required for handling & maintaining bidder's equipment shall be in bidder's scope of supply.
13. Canopy shall be considered by bidder for all the fans (Both Supply & Exhaust).
14. Wall cut outs for mounting fans in buildings: Any breaking/chipping of brick walls for making the cut outs to mount the fans/equipments under bidder's scope shall be performed by the successful bidder. In case already provided cutouts are insufficient suitable modifications shall be done by the vendor. Any patch work/touch up work after chipping shall also be done by the vendor.

C. OTHER IMPORTANT POINTS

Bidder to also consider following things in their scope apart from referred bid document and broad scope mentioned above:

1. The list of drgs. /documents to be submitted by the successful bidder shall be finalized with BHEL after award of the contract (however bidder to consider following tentative list of drgs which is not exhaustive and the bidder shall furnish the drgs/docs accordingly. Engineering drg/doc must essentially contain the following (individual to system, equipment and items) but not limited to these and any drg./ doc required desired by BHEL/NSPCL shall be furnished by the vendor during detail engineering:
 - a. Preparation of ventilation layout drawings
 - b. Schematic Diagrams
 - c. Civil assignment drgs with Load data for relevant equipment
 - d. Ducting layout drawings.
 - e. Various schedules

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

- f. Design calculations
 - g. Data sheets
 - h. O&M manuals
 - i. PG test procedures
 - j. QAPs
 - k. FQPs
 - l. Equipment GA Drawings with load data.
2. Bidder to note that fronts during erection will be given in a staggered manner. So, bidder has to consider and envisage mobilization of all resources required, including manpower, in a shortest possible time during execution time. For this bidder has to consider advance resource planning so that erection by the successful bidder is not delayed.
 3. Supply of grouting cement and grouting of all equipment/items and its drives is in bidder's scope. BHEL's civil contractors shall provide only the foundation pockets for pedestals (wherever necessary) as per mech. GA drgs/duct layouts.
 4. Supply of all the motors related to this package, drive alignment, etc. shall be in bidder's scope.
 5. Supply of all mounting & anchoring arrangement (Bolts/ anchor Fasteners) for ducts shall be in bidder's scope.
 6. Interconnection activities like fixing ducts, taking support from roof beams using nut & bolt, etc. shall be in bidder's scope of work.
 7. Supply, E&C of all duct supports and its fixing required for ventilation systems during erection shall be done by bidder in association & coordination with BHEL's civil & structural contractor.
 8. BHEL shall provide necessary insert plates as per bidder's approved mech. GA drgs only. During E&C if any additional inserts are required which are not indicated in mech. GA then the same shall be in bidder's scope, without any cost implication to BHEL.
 9. Minor chipping i.e. up to 50 mm thk. , micro leveling, and providing shim plates for erection of equipment/items shall be in bidder's scope.
 10. Provision of any temporary supports/platforms required for E& C of mech. equipment /items shall be in the scope of bidder.
 11. Base frame and fixing/foundation bolts for all fans & its motors and couplings (if any) shall be in bidder's scope of supply and work.
 12. Necessary provisions shall be considered in the equipment/ items/ systems which are in bidder's scope for integrating with other equipment/ systems/ items which are part of BHEL's other contractor's scope.

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

13. Bidder's scope shall also include system integration & control requirements and control philosophy with overall coal handling plant.
14. Bidder shall submit the monthly engineering progress reports in BHEL's format and depute full project team for attending all project review meetings called by BHEL without fail.
15. **Bidder shall adhere to the list of approved vendors mentioned in the Vol-I NSPCL EPC tender document for the makes of various components (Bidding document no CC & M-C-347-211)**
16. In addition to the no. of copies indicated and desired by end customer, bidder to ensure submission of additional 4 sets of all engineering drg. /doc to BHEL and for all such subsequent revisions in hard form along with a soft copy sent thru email addressed to Project manager and concerned project team.
17. Bidder shall make their own arrangements well in advance for items like cranes, hydras, etc. that are required for erection.
18. Supply and erection of fixing frames for all the fans (including axial type and propeller type) and shall be in bidder's scope.
19. Bidder shall furnish the L-2 project schedule for complete project indicating various milestones and constraints along with the bid. Successful bidder shall furnish the L-3 project schedule in line with the L-2 schedule after award of the contract.
20. Bidder should submit Project Team Chart for engineering & site activities.
21. During erection, commissioning, trial run & PG test, successful bidder shall depute continuously and maintain minimum one graduate engineer and one diploma engineer having requisite relevant experience till handing over of the systems to the customer for supervision and execution of the work at site.
22. Checking & preparation of Joint protocol for civil foundation etc is the responsibility of the successful bidder
23. The design, manufacturing, inspection and testing of the equipment shall comply with all the currently applicable statutes, regulations and safety codes in the locality where the equipment is to be installed and shall also conform to the latest edition of Indian and other international standards and codes. Nothing in this specification shall be construed to relieve the contractor of the required statutory responsibility. In case of any conflict & ambiguity in the standard to be followed the decision of BHEL shall be final and binding.
24. In case of any ambiguity, conflict in the standard & specification and/or interpretation of clauses in this enquiry specification and its enclosures, the decision of BHEL shall be final and binding and any change due to this shall have no price implication on BHEL and shall have to be absorbed by successful bidder.

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

25. Bidder's shall raise all ambiguities, conflict in the standard & specification and/or interpretation of clauses, if any, in this enquiry specification and its enclosures during pre-bid stage itself, failing which it shall be understood that bidder has no issue and at later date successful bidder shall have no right to take any technical and commercial advantage out of any ambiguity, conflict in the standard & specification and/or interpretation of clauses and the decision of BHEL shall be final and binding.
26. Bidder shall strictly follow and adhere to the guidelines laid down in the enclosed BHEL's Health, Safety and Environment Manual (HSE).
27. Bidder to ensure sufficient manpower throughout the contract period for carrying out engineering and erection & commissioning activities in parallel at site.
28. Bidder to extend all help and documentary support for compliance and addressing any statutory issues raised at site which pertains to the area/work under bidder's scope.
29. Drawings of all the equipment shall be furnished in editable AutoCAD format.
30. Bidder to note that list above is not exhaustive and any work/items required for completing the system and ensuring its satisfactory running shall also be in the scope of this package bidder.
31. Bidder's scope includes supply and erection of supporting members to fix the exhaust fans for exhaust ventilation in tripper floor/bunker bay. Tentative quantity to be considered is 36m of ISMC-200.

Note:

1. Bidder to note that the above list is not exhaustive and any work required for completing the system and ensuring its satisfactory running shall also be in the scope of this package vendor.
2. Bidder shall submit the signed and stamped copy of all the pages which constitutes this technical enquiry specification signed by authorized signatory and clearly mentioning each clause under following two categories to avoid any ambiguity in scope understanding & the scope division as a technical offer during bidding.
 - a. "accepted without deviation and considered in scope of work"
 - b. "Not considered in scope of work"

D. SCOPE OF ELECTRICS FOR VENTILATION SYSTEM:

a. POWER SUPPLY SYSTEM

1. H.T. Supply
 - i. Motors above 160 KW for CHP and 200KW for remaining areas and also LT Transformers (6.6KV/415V)

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

Voltage & Frequency	6600 V AC, 3ph, 3W, 50 Hz
Voltage variation	±10%
Frequency variation	±5%
Combined Voltage & frequency variation	10% (absolute sum)
Fault level	40 KA symm. for 1 sec.
Earthing	non-effectively earthed

2. L.T. Supply

- i. Motors and loads up to 160 KW for CHP and 200KW for remaining areas and lighting transformers (1:1)

Voltage & Frequency	415V AC, 3 phase , 4W, 50 Hz
Voltage variation	±10%
Frequency variation	±5%
Combined Voltage & frequency variation	10% (absolute sum)
Fault level	50 KA symm. for 1 sec.
Earthing	effectively earthed

- ii. Control, Protection & Metering for LT Switchgear/MCC/Control Panel

Voltage & Frequency	110V AC, 1 phase, 50 Hz
---------------------	-------------------------

- iii. Motors upto 200W, Lighting, space heaters and A.C. control & protective devices (other than mentioned in point b above)

Voltage & Frequency	240V AC, 1 phase, 2W, 50 Hz
Voltage variation	±10%
Frequency variation	±5%
Combined Voltage & frequency variation	10% (absolute sum)
Earthing	effectively earthed

- iv. UPS power supply for DCS/PLC, control & instrumentation

Voltage & Frequency	240V AC, 1 phase, 2W, 50 Hz stabilized supply through UPS system
---------------------	---

- v. Maintenance Lighting

Voltage	24V AC
---------	--------

3. DC Supply

- i. D.C. alarm, control & protective devices, DC motors, Emergency lighting

Voltage	220V DC, 2W
Fault level	25 KA
Earthing	unearthed

- ii. Control & Instrumentation

Voltage	24V DC
---------	--------

For the purpose of design an ambient temperature of 50 deg. C and relative humidity of 95% shall be considered.

- b. ELECTRICAL AND C&I SCOPE DIVISION:

Note:	B indicates BHEL scope
	V indicates Bidder scope
	EC indicates BHEL Electrical Erection Contractor

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

Sl. No.	Equipment Description	Design	Supply	Erection	Commissioning	Remarks
1.	6.6kV Switchboard and power supply feeder (for motor/equipment which are rated for HT)	B	B	EC	EC	
2.	HT Power cables from 6.6kV switchboard upto the respective Motor/equipment	B	B	EC	EC	
3.	415V power supply feeders (SFU/ MCCB/ Starter feeders) in MCC/Switchgear for equipment viz. motors/ Local Control Panel/ Local Starter-cum Control Panels/ JB's/ PDBs	B	B	EC	EC	Any other voltage level required at field from the respective Local Starter-cum Control Panels shall be in Bidder scope.
4.	Cables (LT Power Cables/ Control Cables/ Instrumentation Cables) Complete cables between MCC to Equipment/JB/Panel/LPBS, DCS panels to equipment/JB, JB/Panel/LPBS to equipment.	V	B	V	V	Cable Engineering, Schedule shall be in Bidder's scope.
5.	Cable Tray and accessories Complete cable tray between MCC to Equipment/JB/Panel/LPBS, DCS panels to equipment/JB, JB/Panel/LPBS to equipment.	V	B	V	V	
6.	Conduit required for complete system	V	V	V	V	
7.	Earthing for complete System	V	B	V	V	Earthing Layout Be in Bidder scope.
8.	Special cables as required	V	V	V	V	
9.	Complete Electrical and C&I for Air Conditioning and Ventilation System	V	V*	V	V	*Except BHEL supplied items MENTIONED ABOVE AT Sl.No. 1 to 5.
10.	Provision/Facility to monitor and operate the AC & VS from respective Control Rooms.	V	V	V	V	
11.	DCS for complete CHP & AHP	B	B	B	B	DCS Input required from AC & VS system shall be arranged by bidder.
12.	LT Motors for Air Conditioning and Ventilation system including base frame /both half couplings, foundation bolts	V	V	V	V	
13.	Local Push Button Station	V	V	V	V	

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

Sl. No.	Equipment Description	Design	Supply	Erection	Commissioning	Remarks
14.	Power JB, Control JB	V	V	V	V	
15.	Local Power cum control panel, Power Distribution Board The control panels shall be complete with necessary power, control, monitoring and regulating equipment to render the job complete in all respect. PDB for Split ACs shall have Two incomers with auto changeover facility.	V	V	V	V	
16.	Speed control (VFD) required for any of the drives	V	V	V	V	Complete arrangement for the same including panels shall be in the scope (supply and E&C) of bidder.
17.	Field Devices viz. Pressure Switches, Pressure gauges, Valves, thermostat, air-stat, humidistat, thermometers, flow switches, heaters, Solenoids, control junction boxes, or any other device/instrument for control/monitoring of the Air Conditioning and Ventilation system.	V	V	V	V	
18.	Any other equipment/material/service required for completeness of system but not specified in the above (to ensure trouble free and efficient operation of the system). shall be bidder's scope.	V	V	V	V	

c. FEEDERS PROVIDED BY BHEL-ISG:
BHEL-ISG shall provide feeders as follows:

Sl.No.	Power Supply feeder for	No. of feeders	Type of feeder	Remarks
1	MCC RIO Room Air Conditioning	2 Nos. feeders at each MCC	415V-3Ph-SFU	Further distribution shall be in the scope of the bidder including power supply distribution arrangement, cable laying, conduit laying. Termination of
2	MCC Control Room Air Conditioning	1 No. feeder at each MCC	415V-3Ph-SFU	
3	WT Control Room Air Conditioning	1 Nos. feeder at CHP-MCC-1 (WT MCC)	415V-3Ph-SFU	
4	Bunker bay ventilation system	1 No. feeder only for the complete system from CHP-MCC-3 (TP-5 MCC)	415V-3Ph-MCCB	
5	Supply Fan for Ventilation System (except Bunker bay ventilation system)	1 No. feeder for each Supply fan from nearest MCC	415V-3Ph-DOL	

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

6	Exhaust Fan for Ventilation System (except Bunker bay ventilation system)	1 No. feeder for each Exhaust fan from nearest MCC	415V-3Ph-DOL/ 240V-1Ph as applicable	cables at both ends etc.
---	---	--	---	--------------------------

Notes:

- Design, Supply, Erection, Testing and Commissioning of Complete Electrical and C&I items Air Conditioning and Ventilation System is in the scope of the Bidder.**
- Wherever BHEL is providing 1 No. feeder of 415V-3Ph supply, any further distribution of power supply and other required Voltage levels for the system shall be in the scope of bidder. Bidder shall furnish power supply requirement.
- BHEL shall supply cables, cable trays and earthing material required for the Air Conditioning and Ventilation System, as free issue items to Bidder.
- Any special cable required for the system shall be in the scope of bidder.
- Bidder's scope shall also include laying of cable trays, laying & termination of cables, earthing of all equipment. Necessary ferrules, cable tags, lugs, etc. required shall be in Bidder's scope. However, Bidder may use already available cable trays of BHEL-ISG for laying the cables.
- BHEL shall provide power feeder of required rating as per the table mentioned above. Further distribution shall be in the scope of the bidder including supply and E&C of power supply distribution arrangement, cable laying, conduit laying, termination of cables at both ends etc.

E. DOCUMENTS TO BE FURNISHED ALONG WITH THE BID

- List of Commissioning spares and start-up spares.
- List of special tools and tackles.
- List of recommended spare parts list for 3 years trouble free operation.
- Reference list of your customers for the similar items / system supplied & executed already.
- Latest performance certificates, completion certificates etc. obtained from end customer.
- Signed & stamped copy of complete NIT documents, without which bidders offer is liable for rejection.
- Complete system sizing & drive schedule.
- L2 Schedule

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

F. EXCLUSIONS

- 1) Civil & structural work of ventilation rooms and fan foundations.
- 2) Civil & structural work of TPs, WT-complex, Track hopper, ERH, Crusher houses, other buildings and conveyors are excluded.
- 3) Supply of hoists and monorails for equipment handling.

G. ENCLOSURES

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

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

1. Design Basis report for Ventilation system-CHP- Document Number:- IS-4-DB-708-111-M149, Rev-02
2. Design Basis, Calculations for Ventilation System (AHP)- Document Number:- IS-4-DC-708-300-M033
3. Flow diagram
4. GA& LOAD DATA OF CONV 1AB
5. GA & LOAD DATA OF BUNKER BAY
6. GA & LOAD DATA OF WAGON TIPPLER COMPLEX
7. GA& LOAD DATA OF TP-1
8. GA& LOAD DATA OF CONV-2A/B
9. GA& LOAD DATA OF RH-1
10. GA& LOAD DATA OF RH-2
11. GA& LOAD DATA OF CONV-9
12. GA& LOAD DATA OF CONV-10
13. LAYOUT OF CHP- MCC-1
14. LAYOUT OF CHP-CH MCC
15. LAYOUT OF CHP- TP-5 MCC
16. LAYOUT OF AHP-MCC-1
17. LAYOUT OF AHP-MCC-2
18. AHP BUILDING DRAWINGS
19. ANNEXURE-1: LIST OF MANDATORY SPARES
20. NSPCL NIT Specification

BHEL- ISGBANGALORE 	1 X 250 MW NSPCL ROURKELA TPP TECHNICAL ENQUIRY SPECIFICATION FOR VENTILATION & AIR CONDITIONING SYSTEM PACKAGE FOR CHP & AHP	DOCUMENT NUMBER NSPCL-VENT
	CUSTOMER : NSPCL	REV NO: 0 DTD: 29.03.18

- Section-6-00.Vol-I-EPC.pdf (NSPCL PREFERRED MAKES ARE MENTIONED IN THIS DOCUMENT)
- Section-6-03.Vol-IIC-BOP.pdf
- Section-6-04.Vol-IID-Candl.pdf
- Section-6-05.Vol-IIE-Electrical.pdf
- Section-6-06.Vol-IIF-Civil.pdf
- Section-6-07.Vol-IIG-EquipmentSizingandPainting.pdf
- Section-6-08.Vol-IIH-PipingsValvesandFittings.pdf
- Section-6-16.Vol-III.pdf
- AMENDMENTS & CLARIFICATIONS