



BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-8-May-20

CORRIGENDUM- 02

PROJECT	:	NPGCPL NABINAGAR FGD, BRBCL NABINAGAR FGD, NTPC KORBA TPP FGD, NTPC RAMAGUNDAM TPP FGD NSPCL BHILAI TPP-FGD
PACKAGE	:	COMPRESSED AIR SYSTEM FOR FGD
ENQUIRY NO	:	PE/PG/NB2/E-6421/2020 Dt. 11.04.2020
SUBJECT	:	Replies of Pre-Bid Queries

Type of Corrigendum			
Technical Corrigendum -	☒	Commercial Corrigendum -	☐

In reference to the above mentioned tender enquiry please note the following.

1. Please find the reply of pre-bid queries.

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

Yours faithfully,

For and on behalf of BHEL

Vinit Kumar Verma
Dy. Manager

	REPLY TO PRE BID CLARIFICATIONS TO BIDDER				
	END USER :	BHEL -NTPC Bhilai (2X550); 3x660 MW NPGCPL NABINAGAR FGD; 4X250 MW BRBCL NABINAGAR FGD; 3X200+3X500+1X500 MW NTPC KORBA TPP FGD; 3X200 + 3X500 MW NTPC RAMAGUNDAM TPP FGD;			
	Package	Compressed Air System			
	Specification No	PE-TS-468-555-A001; PE-TS-466-555-A001 ;PE-TS-457-555-A001;PE-TS-463-555-A001 ;PE-TS-467-555-A001			
PRELIMINARY- CLARIFICATION LIST					
Sr No	Clause No	Description	D/C	Bidder's Clarification	Customer Remark
1	SECTION-B	PROJECT INFORMATION WITH WIND AND SEISMIC DESIGN CRITERIA	C	Atlas Copco shall provide static weight of compressor & dryer to design civil structure. BHEL- NTPC requested to provide 100 mm elivated surface for compressor and dryer as per earlier executed projects. Civil (Minor/Major) work is not in Atlas Copco scope. Screw compressor is rotatry in nature & anti vibration pads are already available inside compressor skid, hence separate foundation bolts for compressor is not require. However foundation bolts shall be provided to Air receiver.	Bidder to comply specification requirement.
2	Volume IIB; Section C1A, Caluse 1.1.8	Hoses for O&M	C	Hoses for Operation & Maintenance is not required.	Bidder to comply specification requirement.
3	Volume IIB; Section C1A, Caluse 11.1.6	Grouting of equipment	C	Gouting require (if any) is in EPC Contractor scope	Bidder to comply specification requirement.
4	Volume IIB; Section C1A, Caluse 11.1.9	Max temp of hot water from compressor shall be 6 deg. C higher cooling water inlet temp Further the temperature of the air at the outlet of after cooler shall be limited to 7 deg.C outlet air temperature from air dryer in any case shall not be more than 45 deg. C The pressure drop across the individual equipment’s within the compressor shall be maintained at 6 to 8 MWC. However, the pressure drop across the complete cooling water circuit shall be 10 MWC	C	Compressor & dryer coolers are designed for 10 deg rise. Outlet temp of Air will be approx 10 deg Above Cooing water inlet temp Outlet air temperature from air dryer in more than 45 deg C, hence AC will provide external aftercooler after Air Dryers to minimise temperature to 45 deg. C Pressure drop across compressor & dryer shall be approx 1 Kg/cm2	Bidder to comply specification requirement.
5	Volume IIB; Section C1A, Caluse 11.1.10	Access Platform for Receiver	C	All instruments shall be mounted on Manheight for easy access , hence ladder is not not require	Bidder to comply specification requirement.
6	Volume IIB; Section C1A, Caluse 11.1.11	KKS Tag	C	KKS tagging shall be followed for parts outside compressor and dryer skid. Within skid AC standard philisophy shall be followed inline with previous projects.	Bidder to comply specification requirement.
7	Volume IIB; Section C1B, Caluse 3.1 F)	Noise level	C	Noise of compressor shall be 85 DB measured accordingly ISO 2151: 2004 using ISO 9614/2.	Bidder to comply specification requirement.
8	Volume IIB; Section C2A, Caluse 3.00.00	Monorail/Hoist/Cranes	C	Lifting equipment is not in Ac scope of supply	Bidder tto refer Cl. No. 3, Exclusions, Volume IIB; Section C1A
9	Volume IIB; Section C2-A, Caluse 4.00.00; Annexure IV	Special Tools & tackles	C	Special tools & tackles is not required. Hence not consirded.	Bidder to comply specification requirement.

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10	Volume IIB; Section C2-A, Caluse 8.00.00	Selection Capacity of compressor	C	Compressor is selected for 15 nm3/min at 45Deg C, 75% RH, MSL Bhilai 298Meter; Nabhinagar 107 mtrs; Ramagundam 170 meters;Korba 245 Metrs. AC is not aware of backend calculations for capacity requiriement.	Bidder to comply specification requirement.
11	Volume IIB; Section C2-A, 2.01.00	Compressor Testing	C	Compressor shall be tested at Atlas Copco Pune Factory as per ISO1217 Annexure C '96 for performance.	Bidder to comply specification requirement.
12	Volume IIB; Section C2-A, 2.00.00;4.00.00;6.00.00;7.00.00	Design & Construction - Compressor & Dryer Design	C	Internal Design & Construction of Compressor & dryer shall be as per Atlas Copco standrad design & same is proven design for its performance & inline with earlier supplied equipments to various site of NTPC through BHEL. Pre & post Filters for HOC Single drum Air dryer is not required.	For Compressor & Dryer skid are acceptable as per OEM recommendation, however same shall be subjected to NTPC approval during detail engineering. For equipment, other than above, bidder to comply specification requirement.
13	Volume IIB; Section C2-A 9.00.00	Control Philisophy	C	Elektronikon shall control the operation of equipment. Standrad Input & Output signal shall be avaliable inline with earlier project executed with NTPC. Incase of Abnormal condition visual indication will available on Elektronikon. Internal design & control philisophy of individual compressor & dryer shall be as per Atlas copco design which is inline with earlier supplied equipment to BHEL-NTPC. Each compressor shall be interfaced to gateway through Daisy Chain serial link	Bidder to comply specification requiriement inline with previously executed NTPC projects. Further, non-redundant UPS feeders for compressor microprocessor panel shall be provided by BHEL inline with previously executed NTPC FGD projects.
14	Volume IIB; Section C2-A	Low Pressure Piping		All Air & Water line shall be welded joints instead of Screw Joints. Based on previous experience leakages are observed from threaded joints, hence we are recommending welded joints to avoid leakages.	Bidder to comply specification requirement.
15	Volume IIB; Section C2-B 8.03.02; Annexure-IX	Operation & maintenance Manual	C	Atlas Copco Instruction book & Part list for Compressor and dryer shall be submitted. Information needed from operation & maintenance point of view is already covered in instruction book.	Bidder to comply specification requirement.
16	Volume IIB; Section C2-B 16.00.00	Name Plates	C	Name Plate of Equipment is as per AC standrad design. Same is already covered basic information of equipment and inline with executed BHEL NTPC jobs	Bidder to comply specification requirement. However, same shall be takenup with NTPC during detail enginnering and subjected to NTPC acceptance.
17	Volume IIB; Section C2-B 21.00.00/ C2-D	Inspection & testing/ Quality Assurance	C	Inspection & testing of Atlas Copco equipment shall be offered as per NTPC RQP inline with previous project executed with BHEL-NTPC. For accessories/boughtout items like Receiver, Motor, Valves etc NTPC approved RQP shall be used. For Other items like instruments manufactuer internal test reports shall be provided	Bidder to comply specification requirement. However, same shall be takenup with NTPC during detail enginnering and subjected to NTPC acceptance.

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18	Volume IIB; Section C3; Section D	Electrical Specification/ Local Control Panel	C	Internal Design of compressor & dryer's control panel which is part of equipment skid shall be as per Atlas Copco standrad design & same is proven design for its performance & inline with earlier supplied equipments to various site of BHEL NTPC.	For Compressor & Dryer skid, control panel are acceptable as per OEM recommendation, however same shall be subjected to NTPC approval during detail engineering. For equipment, other than above, bidder to comply specification requirement.
19	Volume IIB; Section C3 Sub Section IIE2 ; PE-SS-999-506-E101 Rev 00	1) 6.01.01- Starting time 2) 6.02.02- Pull out torque at rated voltage shall not be less than 205% of full load torque. It shall be 275% for crane duty motors. 3) 10.00.00- Tyoe Test 4) Codes And Standard	C	LV Motor- Safe Area is considered. Starting current of motors shall be as per IS12615 subject to IS tolerance & the ratio shall accordingly. Efficiency will be hampered if restriction on starting currnet is applied. 1)Thermal withstand time hot: 28 s; Thermal withstand time cold: 70 s 2)Nominal torque TN: 465 Nm; Locked rotor torque TS/TN: 2.1; Maximum torque Tmax/TN: 2.5 3) Testing will be as per NTPC approved QAP 4) Motor will be as per IS12615:2018 / IEC60034-1 & Noise level will be as per IS12065.; Vibration level as per IS12075	Bidder to comply specification requirement.
20	Volume IIB; Section C4	Control & Instrumentation	C	Instruments mounted on compressor & dryer skid shall be as per AC standrad design & connected to Elektronikon (Microprocessor based controller). Instrument outside skid shall be mounted directly on pipe line with help of standrad hookup inline with executed projects with BHEL NTPC. LIE/LIR is not applcaible. Field Instruments shall be wired to field junction box. Further connection to BHEL/NTPC's PLC/DCS for monitoring purpose is in BHEL scope. Each compressor shall be interfaced to gateway through Daisy Chain serial link with customer PLC/DCS. Modbus data shall be made available till gateway as Modbus RTU. Hooking upto plant PLC/DCS shall be in BHEL scope. BHEL to terminate one UPS cable in Compressor panel. Hence UPS DB & changeover is not considered.	For Skid mounted instruments, same is acceptable as per OEM standard inline with previously executed NTPC project, however subjected to NTPC approval during detail engineering. For outside skid bidder to comply specification requiriement.
21	Codes & Standard	Codes & Standard	C	Mentioned codes and standard is generalised and ACIL shall follow manufacturer design and testing standard as per previous executed Projects.	Bidder to comply specification requirement.
22	Volume IIB; Annexure-I	Sub Vendor List/List of Makes	C	Internal components of Air Compressor & Air dryer - AC approved source shall be followed. For Other items BHEL- NTPC Approved source can be followed.	For Compressor & Dryer skid, makes are acceptable as per OEM recommendation, however same shall be subjected to NTPC approval during detail engineering. Outside skid, bidder to comply specification requirement.



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23	Volume IIB Section E-Annexure-III	Painting & colour scheme	C	Atlas Copco standrad painting procedure shall be followed for AC equipment which is followed in BHEL- NTPC Projects	Bidder to comply specification requirement.
24	Volume IIB Section E- Annexure-V	DM Water Analysis	C	Atlas Copco recommended water specification for compressor & Dryer for satisfactory performance is attached for reference.	Bidder to comply specification requirement.
25	Volume IIB Section E- Annexure-VI	Drawing & Documents	C	List of documents shall be submitted as per Annexure VIII- Master drawing list with Schedule of Submission.	Bidder to comply specification requirement.
26	Volume IIB Section E- Annexure-X	Site Storage & preservation	C	Site storage & preservation will be in BHEL/NTPC scope. BHEL/NTPC will release material during site mobilisation	Bidder to comply specification requirement.
27	Section E- Annexure-XI	Packing Procedure	C	Atlas Copco standard packing procedure shall be followed which will ensure safe delivery of material without damage to site. Same is followed in BHEL - NTPC Project	Bidder to comply specification requirement.
28	Section E- Annexure-XII	Commissioning Spares	C	For Atlas Copco compressor & dryer are plug and play equipment. Separate Commissioning spares are not required for commissioning. So same is not applicable. AC is responsible for first commissioning of compressor.	Pl. refer Amendment-1 for compliance.
29	Compressor House P&ID	P&ID- 011-109-POM-A-006	C	Interconnection changeover of compressor from one dryer to other is manual. All field instrument shall be locally mounted on pipeline and connected JB. Then further to customer's PLC/DCS for Monitoring by customer. This compressor works on back pressure, hence NRV at compressor outlet is not recommended. NRV is inbuld in compressor after second stage. Pipe& Instrument cable routing is considered through trench as per standrad practice with BHEL- NTPC AC understand meaning of below symbol is connection to PLC/DCS Dew Point Sensor is Inbuld in Air Dryer And Connected to Elektronikon C-- reading is available in DCS for Monitoring. Hence seperate Dew point Sensor at header is not requirie, hence not considered in Scope	Bidder to comply specification requirement.

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30	General	Piping Scope	C	As room floor plan is not available, we have consider location of compressor & dryer near to each other (based on earlier executed projects) & Receiver outside room for pipe length calculation. After Air receiver 5 meter air header (straight) has been considered in scope of supply.	Bidder to comply specification requirement. Placement of equipment inside compressor House shall be finalised during detail engineering and shall be subjected to NTPC approval taking into consideration of operation & maintenace aspects of equipment.
31	General	Control & Instrumentation	C	Dual redundancy for Alarm/Annunciation and triple redundancy for trip/Shutdown within compressor & dryer skid is not possible. .Hardwired for Start/Stop, Load/Unload shall be done. Non Redundant microprocessor based control panel inline with all BHEL NTPC executed orders.	Bidder reply is noted for compressor & dryer and shall be inline with previously executed NTPC projects, subjected to NTPC approval during detail engineering.
32	General	Spares list	C	Atlas Copco considered Mandatory spares list provided along with price format bid documents. Other Spares mentioned anywhere else in tender document is not considered. First Commissioning of Equipment is in Atlas Copco Scope. Further requiriment of spares/consumable etc shall be chargeable.	Regarding mandatory spares - Bidder to comply specification requirement. Complete list of required mandatory spares is already complied and made part of price format. Regarding commissioning spares - Refer Amendment-1 for com[pliance.
33	General	Construction Power	C	Construction Power is in customer scope	Pl. refer NIT Cl. No. 33 for the same.

Note : Only above mentioned Project Specifications are applicable.

Legend : C- Clarification, D-Deviation, I-Information

