

ADDENDUM-6

DATE: 18-05-2019

CHP/LHP/GHP Package for 1X660 MW Panki Thermal Power Station

Tender Ref : 77/19/6003/ANA

1. Pre-bid Queries & BHEL clarifications have been uploaded in the website <https://bhel.abcprocure.com>
2. Any further addendum such issued carry part of the bidding documents and this will be available at the website from where the original documents have been received / downloaded by the bidder. Hence bidders are requested to visit the website <https://bhel.abcprocure.com> on regular basis.

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ENQUIRY NO. : 77/19/6003/ANA dtd. 17.04.2019
CHP/LHP/GHP PACKAGE FOR 1X660 MW PANKI THERMAL POWER STATION

Sr. no	Bid Document	Page	Clause	Description As per NIT	Bidders' Query / Comment	BHEL Reply DTD:18-05-2019
1	BHEL DWG.No. IS-0-713-100-M002-, Rev.04	SH 1 of 1	-	Two no. of pump houses & tanks for PMH-1 & PMH-2	Both documents are contradict with each other. Kindly clarify whether we need to follow plant layout or technical specification.	As per layout only two pump house is envisaged to cater all pump for dust suppression for CHP/LHP/GHP.
2	Volume III : Mechanical Works	8 of 116	19	Construction of Pump house# PMH-1/ 2/ 3/ 4 to accommodate pumps, water tank etc. for Pre Spray type Dust Suppression System for Wagon Tippler, Plain Water Dust Suppression system, Dry Fog Dust Suppression System etc.	Please confirm.	
3	-	-	-	General	We understand from plant layout, with two no. of pump house all water system (DS/SW/PW system) for CHP, LHP & GHP has to be covered. Please confirm our understanding is in line with technical requirement.	As per layout only two pump house is envisaged to cater all pump for dust suppression for CHP/LHP/GHP.
4	Volume III : Mechanical Works	94 of 116	M-26, 2.3	DFDSS # 1 shall cover discharge & receipt points of underground equipment / conveyors in Tippler complex # WTC-1. [Pump House # PMH-1] ii) DFDSS #2 shall cover discharge & receipts of equipment / conveyors in ERHC-1 [Pump House # PMH-2] iii) DFDSS #3 shall cover discharge & receipts of equipment / conveyors in bldg# CRH-1/ JT-6/JT-7/ JT-8/JT-9/JT-10 & discharge points of Tripper Conveyors. [Pump House # PMH-3] iv) DFDSS #4 shall cover discharge & receipts of equipment / conveyors in JT-1/2/2A/3/3A/4/5 [Pump House # PMH-4]	As per the tender requirement, Four (4) no, of DFDS system has to be considered. Plant Layout says two no. of pumps for entire CHP/LHP/GHP. Specification is not clear, whether we need to follow four no. of DFDS system as per technical document or two no. of DFFDS system for CHP area. Please clarify.	As per layout only two pump house is envisaged to cater all pump for dust suppression for CHP/LHP/GHP.

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5	-	-	-	General	<p>Technical specification is silent about the service Air requirement of CHP & LHP area. Hence we have presumed service air is required for cleaning of floors/equipment only at Transfer towers/junction tower/ crusher house of CHP & LHP areas only.</p> <p>For the above requirement we have taken a tap off point from DFDS air line. No dedicated service air system has been considered.</p> <p>Service air consumption at each tap point shall 5 cum/hr.</p> <p>Total five no, (5 No.) service air tap points shall operate at a time for CHP & LHP area. (i.e., 3 No. at CHP area +2 No. at LHP area shall operate simultaneously).</p> <p>Please confirm.</p>	<p>service Air is required for all over CHP/LHP/GHP area.</p> <p>Other things related to air flow, tap point etc shall be decided during detail engineering.</p>
6	-	-	-	General	<p>We have presumed dedicated DFDS system (with pumps & compressor & other accessories etc.) for LHP area.</p> <p>Kindly specify the location of pump house for LHP DFDS system.</p>	<p>As per layout only two pump house is envisaged to cater all pump for dust suppression for CHP/LHP/GHP. Dedicated system for LHP/GHP area is to be considered.</p>
7	Volume III : Mechanical Works Apron Feeder:			Chain link: Chain link shall be forged steel. Pins and rollers shall be hardened steel. The chain shall be provided in two rows.	<p>We offer dozer duty crawler type chain. Please confirm.</p>	<p>Please follow tender specification.</p>

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8				Head End: The head end will be of sturdy steel construction suitably stiffened and fitted with spherical roller bearing & 4 bolts, cast steel Plummer Blocks. The sprocket will be made of Cast alloy steel with case hardened teeth.	Sprocket shall be of bidder's standard MOC – IS:2707 Gr.1. Please confirm.	Please follow tender specification.
9				2.8. Pan Speed, 0 to 0.2 m/ sec	Pan speed up to 0.2 m/sec too low for 1500 tph. Will be higher up to 0.3 m/sec. Please confirm.	Please follow tender specification.
10				d) Traction wheel As per standards of crawler chain manufacturer	Tail idler shall be of IS:2707 Gr.1 Please confirm.	Please follow tender specification.
11	Volume III : Mechanical Works Ring Granulator			2.1 Rotor: - Rotor assembly shall be completely balanced statically and dynamically to minimize vibrations and noise. Rotor locking arrangement device shall be provided to facilitate ring hammer changing.	We offer Only dynamic balancing. It takes care of static balancing also. Please confirm	Please follow tender specification.
12			3.1.	Type of Crusher Ring Granulator Type Crusher with bypass facility at feed end.	Not provided, since it creates problem for maintenance of cage and breaker plates. Instead we suggest to provide bypass chute before VGF, so that both VGF and crusher need not operate. Please confirm.	Please follow tender specification.
13			3.7.	Crushing Capacity for each crusher	We are considering the capacity as 900 TPH - Rated / 990 TPH- Design. Please confirm	Noted.

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14			3.16	Type of crusher cleaning Water jet type	Not integral part of crusher. Please confirm	Please follow tender specification.
15			3.31	Crusher cage Adjustable type to vary output size shall be provided.	Output size is constant as the slot size is same. Please confirm.	Please follow tender specification.
16	Volume III : Mechanical Works Vibrating grizzly feeder:		2.1	Capacity each.	We are considering the capacity as 900 TPH - Rated / 990 TPH- Design . Please confirm	Noted
17				2.10. Bearings a) Type - Double spherical roller suitable for vibrating screens. b) Lubrication - Grease c) Life - 8000 hours minimum	Cylindrical roller bearings with splash oil lubrication are provided instead of Double spherical rollers. Please confirm	Please follow tender specification.
18	Electrical			The PLC/ DCS/ DDCMIS for the CHP is in the scope of BHEL –	Is our understanding is correct ?	Only DDCMIS/DCS is in BHEL's scope. PLC for other areas of CHP (WT, SCR etc..) is in Vendor's scope.-Refer sl. No's 35-37 of Electrical scope matrix.
19				The incoming supply to Stacker cum Reclaimer Machine is 11KV or 3.3KV –	Kindly clarify	SLD is under approval. And Voltage levels shall be informed during Detailed engineering.

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20				The Wagon Tippler scope starts from MCC i.e. (WT MCC is BHEL scope of supply) -	Is our understanding is correct?	Pl. refer detailed Electrical scope matrix.
21				Please provide SLD and PLC / System configuration for CHP package.		SLD is under approval. However, we have considered 4 MCC's for CHP and for PLC's BOQ, you may refer sl. No's 35-37 in Electrical scope matrix. Further, SLD and PLC Configuration diagram shall be provided in Detailed engineering.

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ANNEXURE-02 (rev-01)
ELECTRICAL and C&I ITEMS SCOPE OF SUPPLY AND WORKS FOR COAL HANDLING PLANT AND FGD FOR 1X660 MW PANKI TPS

Sl.No.	Equipments	Design & Engineering	Supply	Receipt, Unloading/Storage and Security	Local Transport, Erection, Testing and Commissioning	Remarks	Vendor comments / clarifications on scope
1	11 KV and 3.3 KV HT switchboard	BHEL	BHEL	BHEL	BHEL	Vendor shall furnish HT load list with type of feeder, rating and power requirement. For SCR Machine transformer, BHEL shall arrange 11/3.3 KV HT supply up to the land mounted JB/LOAD BREAK SWITCH (supplied by Vendor), further power distribution is in the scope of Vendor.	Only HT load list will be furnished by Vendor. Design, Engineering and Supply by BHEL. As detail scheme will be part of HT supplier & BHEL have to scrutinize it as per their requirements.
2	3.3KV HT Busduct	BHEL	BHEL	BHEL	BHEL		BHEL shall arrange 11/3.3 KV HT supply up to the land mounted JB/LOAD BREAK SWITCH (supplied by Vendor), further power distribution is in the scope of Vendor.
3	3.3 KV HT Motors	BHEL	BHEL	Vendor	Vendor	HT Motor input details (like, sizing calculations along with the interface details like GD ² values, T-S Curves, Speed, Coupling type, mounting arrangements Starting method etc.) shall be furnished by the Vendor. Temperature Transmitters mounted in JBs shall be considered for Winding and Bearing temperature measurement of HT Motors (including BHEL supplied Motors) & Crushers and the same shall be in the scope of bidder.	Vendor scope should be limited up to Temperature Transmitters mounted in JBs for Winding and Bearing temperature measurement of BHEL Supplied HT Motors & Crushers.
4	11/0.433 KV Dry Type Transformers except for SCR Machine	BHEL	BHEL	BHEL	BHEL	Vendor shall furnish LT load list with type of feeder, rating, duty and Power requirement.	Design, Engineering and Supply of 11/0.433 KV Dry Type Transformers except for SCR Machine is in the scope of BHEL.
5	11/0.433 KV or 3.3/0.433 KV Dry Type Transformers for SCR Machine	Vendor	Vendor	Vendor	Vendor		Design, Engineering and Supply of 11/0.433 KV or 3.3/0.433 KV Dry Type Transformers for SCR Machine is in the scope of Vendor.
6	LT Switchgear except for SCR Machine	BHEL	BHEL	BHEL	BHEL		Design, Engineering and Supply of LT Switchgear except for SCR Machine is in the scope of BHEL.
7	LT Switchgear for SCR Machine	Vendor	Vendor	Vendor	Vendor		Design, Engineering and Supply of LT Switchgear for SCR Machine is in the scope of Vendor.
8	LT bus ducts	BHEL	BHEL	BHEL	BHEL	Connection from SCR Machine Transformer to SCR MCC is in Vendor's scope.	Design, Engineering and Supply by BHEL. SR Transformer to SR MCC via Cable only & it's in scope of Vendor.
9	LT Motors	Vendor	Vendor	Vendor	Vendor	LT Motor sizing calculations along with the type of feeder requirement shall be furnished by the Vendor. Motor shall be suitable for power cable terminations as per cable schedule, Power JB shall be provided by Vendor if required.	Design, Engineering and Supply by Vendor.
10	Variable Frequency Drive Panels	Vendor	Vendor	Vendor	Vendor	VFD Panels as required for this Package is in scope of Vendor. VFD panels for Apron feeder shall be kept in the WT-Control room.	Design, Engineering and Supply by Vendor.

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ANNEXURE-02 (rev-01)
ELECTRICAL and C&I ITEMS SCOPE OF SUPPLY AND WORKS FOR COAL HANDLING PLANT AND FGD FOR 1X660 MW PANKI TPS

Sl.No.	Equipments	Design & Engineering	Supply	Receipt, Unloading/Storage and Security	Local Transport, Erection, Testing and Commissioning	Remarks	Vendor comments / clarifications on scope
11	HT Power Cables	BHEL/Vendor	BHEL	BHEL	BHEL/Vendor	<p>For SCR Machine: 11/3.3 KV HT and C&I cabling up to the land mounted JB/LOAD BREAK SWITCH (supplied by Vendor) is in the scope of BHEL, further HT/LT/C&I Cabling is in the scope of Vendor.</p> <p>All the hardwired signals required for interfacing between SCR machine and DCS shall be wired upto the land mounted Control JB.</p> <p>For WT Machine, SAC, Wagon Shifter and Pusher etc :</p> <p>a) HT/LT/C&I Cabling and Termination between Vendor supplied equipments is in the scope of Vendor.</p>	<p>All HT, LT Power Cables, Control and Instrumentation Cable Design & Engineering and supply by BHEL except for SCR Machine & WT Machine.</p> <p>SCR, SAC, Wagon Shifter and Pusher Vendor supplied equipment and Vendor will provide Cable sizing calculations, cable schedule and cable Termination charts (for Vendor scope of cables) for customer approval and supply LT Power Cables and Control and Instrumentation Cable for supplied equipment in the scope of Vendor.</p>
12	LT Power Cables	BHEL/Vendor	BHEL	BHEL	BHEL/Vendor	<p>b) HT/LT/C&I cabling from BHEL supplied MCC to Vendor supplied PLC/ drives/equipments is in the scope of Vendor.</p> <p>c) All the interfacing signals required between WT PLC and DCS is in the scope of Vendor.</p> <p>For Balance Area :</p> <p>a) HT/LT/C&I Cabling and Termination between Vendor supplied equipments is in the scope of Vendor.</p>	<p>However HT/LT/C&I cabling between MCC/DCS and Vendor supplied equipments is in the scope of BHEL.</p>
13	Control and Instrumentation Cables	BHEL/Vendor	BHEL	BHEL	BHEL/Vendor	<p>b) HT/LT/C&I Cabling and Termination between MCC/DCS and Vendor supplied equipments is in the scope of BHEL.</p> <p>Vendor shall provide Cable sizing calculations, cable schedule and cable Termination charts (for Vendor scope of cables) for customer approval. BHEL will supply the cable based on the BOQ of Cables furnished by Vendor.</p>	
14	Flexible/Trailing/Festoon/Composite/Co-axial Cables/Un-armoured or any other special cable required for this package including fixing arrangement such as festooning. Cable reeling	Vendor	Vendor	Vendor	Vendor		<p>Flexible/Trailing/Festoon/Composite/Co-axial Cables/Un-armoured or any other special cable required for Vendor Scope / supplied equipment are limited to scope of Vendor.</p>

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Sl.No.	Equipments	Design & Engineering	Supply	Receipt, Unloading/Storage and Security	Local Transport, Erection, Testing and Commissioning	Remarks	Vendor comments / clarifications on scope
15	All Data cables such as Profibus ,Modbus,Ethernet cable, OFC etc. and Special cables(other than standard screen cables) ie... cables from sensor	Vendor	Vendor	Vendor	Vendor	OFC Cables for BHEL supplied DCS and for soft connectivity between BHEL DCS & WT machine PLC is in the scope of BHEL.	As stated above, applicable for this cable also.
16	Cable trays & supports	BHEL/Vendor	BHEL	BHEL	BHEL/Vendor	<p>For SCR Machine: Cable tray erection and layout preparation for SCR Machine including Trailing cable is in the scope of Vendor.</p> <p>For WT Machine, SAC, Wagon Shifter and Pusher etc : Cable tray erection and layout preparation (including BHEL scope of cabling) of WT Complex,SAC area and Wagon shifter/pusher area,WT Control room etc. is in the scope of Vendor.</p> <p>For Balance Area :</p> <p>a) Cable tray erection and layout preparation between Control & Power JB/Local Control Panels/PDB etc. and Drives/ Field Instruments etc. is in the scope of Vendor.</p> <p>b) Cable tray erection and layout preparation on moving machine like Travelling Tripper is in the scope of Vendor.</p> <p>c) Cable Tray erection and layout preparation between Switchgear/MCC building to Control & Power JB/Local Control Panels/WT starting point etc. shall be in the scope of BHEL.</p> <p>Vendor shall provide BOQ of Cable tray and Supports.BHEL will supply the Cable trays and Supports based on BOQ furnished by Vendor.</p>	<p>Vendor scope for Cable trays & supports Design, Engineering and Supply are limited as per following :</p> <p>A) For SCR Machine: Cable tray erection and layout preparation for SCR Machine including Trailing cable is in the scope of Vendor.</p> <p>B) WT Machine, SAC, Wagon Shifter and Pusher etc : Cable tray erection and layout preparation (including BHEL scope of cabling) of WT Complex,SAC area and Wagon shifter/pusher area,WT Control room etc. is in the scope of Vendor.</p> <p>C) Cable tray erection and layout preparation between Control & Power JB/Local Control Panels/PDB etc at field and Drives/ Field Instruments etc. is in the scope of Vendor.</p> <p>D) Cable tray erection and layout preparation on moving machine like Travelling Tripper is in the scope of Vendor.</p> <p>E) Cable Tray erection and layout preparation between Switchgear/MCC building to field Control & Power JB/Local Control Panels/WT starting point etc. shall be in the scope of BHEL.</p>
17	Cabling accessories(Termination kits, Cable Glands , Lugs,Tags and conduits	BHEL	BHEL	BHEL	BHEL	For Cabling works included in the scope of BHEL.	Cabling accessories in scope of BHEL.
18	Cabling accessories(Termination kits, Cable Glands , Lugs,Tags and conduits	Vendor	Vendor	Vendor	Vendor	For Cabling works included in the scope of bidder.	Cabling accessories in scope of Vendor.

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Sl.No.	Equipments	Design & Engineering	Supply	Receipt, Unloading/Storage and Security	Local Transport, Erection, Testing and Commissioning	Remarks	Vendor comments / clarifications on scope
19	Earthing and Lightning protection materials	BHEL/Vendor	BHEL	BHEL	BHEL/Vendor	<p>For SCR Machine: Earthing (Electrical & Electronic) & Lightning material erection and layout preparation for SCR Machine including Trailing cable is in the scope of Vendor.</p> <p>Rail earthing & its connection to nearby BHEL earth-grid/ riser for SCR machine/Shifter/Pusher is in the scope of Vendor.</p> <p>For WT Machine, SAC, Wagon Shifter and Pusher etc :</p> <p>Earthing (Electrical & Electronic) and Lightning material erection and layout preparation of WT Complex, SAC area and Wagon shifter/pusher area, WT Control room etc. is in the scope of Vendor.</p> <p>For Balance Area :</p> <p>a) Earthing (Electrical & Electronic) material erection and layout preparation between BHEL earth Pit/Mat/Submat/riser etc and Vendor erected Equipment's/LCP's/Motors/Field Instruments/Tray/Conduit is in the scope of Vendor.</p> <p>Vendor shall provide BOQ of earthing and Lightning materials..BHEL will supply the earthing and Lightning materials based on BOQ furnished by Vendor.</p>	<p>For SCR Machine: Earthing (Electrical & Electronic) & Lightning material by Vendor.</p> <p>Rail earthing & its connection to nearby BHEL earth-grid/ riser for SCR machine / Shifter / Pusher is in the scope of Vendor.</p> <p>For WT Machine, SAC, Wagon Shifter and Pusher etc :</p>
20	Local Push Button Stations and De-interlock switches. (including for BHEL free issue Motors)	Vendor	Vendor	Vendor	Vendor	LPBS Schedule area wise to be submitted by Vendor. Number of NO+NC Contacts shall be considered as per Drive/equipment Control circuit requirement.	LPBS for Vendor supplied equipments is in scope of Vendor. BHEL supplied equipment list to be furnished for Additional LPBS consideration.
21	Power Junction Box and Control Junction Boxes	Vendor	Vendor	Vendor	Vendor	<p>Motor/Equipments/Panels (LCP, DB's, VFD panels, Starter panels etc) shall be suitable for Power cable terminations as per cable schedule, PJB shall be provided by Vendor if required.</p> <p>Cable between PJB and Motor/Equipments/Panels is in the scope of Vendor.</p>	BHEL have to furnish cable schedule before Motor procurement for suitable consideration of Motor TB / PJB. Cable scope details are contradicting with sr. no. 13 above; kindly clarify the same.
28	ACDB / DCDB / PDB for this package	Vendor	Vendor	Vendor	Vendor	Vendor shall furnish the Area/JNT/building wise Load list/DB List with power requirement and total power required for considering feeders in MCC.	Feeder list engineering to be provided to BHEL during DDE.