

**BHARAT HEAVY ELECTRICALS LTD.
CENTRAL FOUNDRY FORGE PLANT
RANIPUR, HARDWAR
MAINTENANCE & SERVICES DEPARTMENT
MAINTENANCE-MACHINE SHOP**

CFF/M&S/MS/REC/2K15/WD200/NIT/01

Dt. 30/11/2015

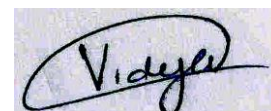
TENDER NOTICE – OPEN TENDER

Two part Tenders in Sealed Envelopes are invited from technically and financially capable parties, having experience in work similar to- and interested in- the under mentioned works. The tender documents are available at website www.bhel.com/www.bhelhwr.co.in in Tender Notification Section which can be downloaded. Tender cost, as mentioned in the Tender Documents is to be deposited along with the tender itself. The tender should reach the office of the undersigned on or before **22/12/2015** at **2:30PM**, which will be opened on the same day in the office of under-signed at **3:00 PM** in presence of the bidders who wish to be present.

Bidders are advised to inspect the site/machines before quoting their rates. Bidders are also advised to go through the Special Instructions attached to this notice. (Placed at attachment-A)

BHEL reserves the right to reject any or all of the tenders without assigning any reason thereto.

Tender No. & Date	Description of Work	Earnest Money	Total Time of completion
CFF/M&S/MS/REC/2K15/W D200/NIT/01 Dt. 30/11/2015	Electrical Retrofitting of Horizontal Borer Machine WD200in Machine Shop	Rs. 60,000/-	22 Weeks

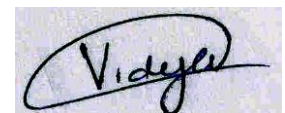


(Vidya Sagar)
Sr. Engineer/M&S
CFFP, BHEL
Ranipur, Haridwar-249403
(Uttarakhand)
Contact No. 01334-284507
E-mail ID: sagar11@bhelhwr.co.in

Copy To. :DGM (works) : for deputing finance representative for tender opening.

SPECIAL INSTRUCTIONS

1. Kindly read this set of Special Instructions carefully before filling up the tender form.
2. **Pre Qualification Requirements placed at Annexure F must be fulfilled by the vendor to participate in the tender and submitted along with Techno-Commercial Bid.**
3. Kindly read carefully Annexure-A, B, C, D, E and F which form the “Details of Scope of Supply”, “Scope of Work”, “Special Terms & Conditions”, “T&C for RA” & “Verification Parameters”.
4. The bidders are to submit the tender form along with all Annexures as well as this set of Special Instructions (Attachment-A); all pages duly signed.
5. The tender is to be submitted in two parts, viz.: i) Techno Commercial Bid and ii) Price Bid. Documents related with Pre-Qualification Requirements i.e. Annexure-F must be submitted along with Techno-Commercial Bid.
6. Both the Techno Commercial Bid and Price Bid are to be sealed separately in separate envelopes super-scribed with “**Techno Commercial Bid for Tender no. : CFF/M&S/MS/REC/2K15/WD200/NIT/01**” and “**Price Bid for Tender no. : CFF/M&S/MS/REC/2K15/WD200/NIT/01**” respectively and then placed in a common envelope super-scribed with “**Tender for Tender No.: CFF/M&S/MS/REC/2K15/WD200/NIT/01**”. The Techno Commercial Bid must also contain an un-priced copy of Price Bid.
7. Vendors have to submit clause wise confirmation of Annexure A, B, C, D, E & F.
8. Only the Techno Commercial bid will be opened on the day of tender opening. The Priced Bid will be opened only if Techno Commercial Bid(s) are found Technically Suitable & Acceptable. Date of opening of Price Bid will be intimated to all technically suitable and acceptable bidders at a suitable time.
9. **It is strongly recommended to all potential bidders to visit the site and the machine under consideration. Any presumption by the bidders in this regard will not be entertained after opening of the tender.**
10. No accommodation facilities will be provided by BHEL to any of the staff of the contractors
11. Apart from the “Special Terms & Conditions”, placed at Annexure-C, the contractor will have to comply with other Terms & Conditions including “General Terms & Conditions” & “Safety Norms” as stipulated in BHEL’s Works Policy as modified from time to time and Government rules.
12. Once Price Bids are opened and accepted by BHEL, the same cannot be withdrawn by the bidder for whatsoever reasons. In case a bidder withdraws his/her/their tender, suitable action may be taken by BHEL as deemed fit. This may include black listing of bidder or legal action.
13. If there is a difference found in the figures & words of the offered price. The price given in the words will be considered.



(Issuing Officer)

BHARAT HEAVY ELECTRICALS LTD.
CENTRAL FOUNDRY FORGE PLANT
RANIPUR, HARDWAR
 MAINTENANCE & SERVICES DEPARTMENT
 MAINTENANCE-MACHINE SHOP
TENDER FORM FOR “RETROFITTING OF MACHINE TOOLS IN MACHINE SHOP”
(PRICE BID)
PRICED/UNPRICED
 (PRICED PRICE BID TO BE SEALED IN SEPARATE ENVELOP)

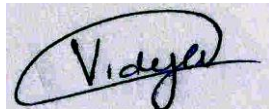
Name & Address of Bidder	:	
Tender Notice No.	:	CFF/M&S/MS/REC/2K15/WD200/NIT/01 Dt. 30/11/2015
Last Date & Time for receipt of Tender	:	14:30 hrs on 22/12/2015
Date & Time for opening of Tenders	:	15:00 hrs on 22/12/2015
Place for opening of Tenders	:	Office of Sr. Engr. (M&S)
Nature of Contract	:	Electrical Retrofitting of Horizontal Borer Machine
Period of Contract	:	WD200 in Machine Shop 22 Weeks (18 Weeks for Supplies, 4 Weeks for Works)

Description of Work

“Electrical Retrofitting of Horizontal Borer Machine WD200 in Machine Shop” consisting of :	Period of Contract	Cost excluding Duties & Taxes (To be quoted by the Contractor) Decision of price competitiveness will be based on Combined Price of Items A and B along with loading as applicable.	
	Weeks	Figure	Words
A. Supply of Material as per Annexure-A (WD200)			
B. Erection & Commissioning Work as per Annexure-B (WD200)			
Total			

Enclosures:

- Annexure-A (WD200) : Detailed Scope of Supply for the retrofitting of Horizontal Boring Machine WD200
- Annexure-B (WD200) : Scope of Work
- Annexure-C (WD200) : Special Terms & Conditions
- Annexure-D (WD200) : Verification Parameters
- Annexure-E (WD200) : T&C for RA
- Annexure-F (WD200) : Pre-Qualification Requirements



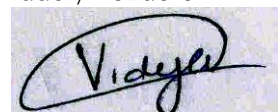
Signature of Issuing Officer

Signature of Bidder/Tenderer

Declaration by Bidder

I/We hereby confirm that I/we have carefully read and understood “Special Instructions”, “Details of Scope of Supply”, “Scope of Work”, “Special Terms & Conditions”, “Verification Parameters”, “T&C for RA” and “Pre-Qualification Requirement”, placed at Attachment-A to the Tender Notice and Annexure-A (WD200), B(WD200), C(WD200), D(WD200), E(WD200) & F(WD200) respectively and have complied/will comply with the same.

Signature of Bidder/Tenderer



(Accounts Officer)

(Opening Officer)

(Issuing Officer)

DETAILS OF ELECTRICAL ITEMS REQUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR THE RETROFITTING WORK OF SKODA MAKE HORIZONTAL BORING MACHINE WD 200

	ITEM	BHEL Requirement	QTY	Acceptable Makes	SUPPLIER's COMMENTS
1	<u>Control Panel</u>				
1.1	Cabinet	Made of min 1.5mm Thick sheet steel painted first with corrosion resistant paint followed by suitable no. of coats (min 2) of industrial grey/off-white paint. Cabinet to be provided with protection against reptile/rodent entry and is to be made Dust & Vermin Proof. Suitable Cooling Arrangement to be provided for each individual section of the Cabinet. Cabinet must contain 12" Touch Panel(s) for control.	01 Set	Rittal/ Schneider, Touch Panel: Same as PLC make	
1.2	Incomer Switch	MCCB of suitable rating (Min 125% of peak load of panel, 50kA Short Circuit Current) with Thermal and Magnetic over current trip (adjustable overload and fixed short circuit), Ground fault protection, tripping relay and Extended rotary drive. Incoming supply will be 415V,3- ϕ ,50 Hz with or without Neutral	01 No.	Siemens/L&T	
1.3	Switchgear	MCCBs, MPCBs, Contactors, Fuses, Switches including all selector switches and push button actuators (which shall be self illuminated type), O/L Relays (if used) of suitable ratings. Min Power Contactor rating : one step higher than the current rating required considering 25% overload. Only Semiconductor Fuses are to be used with semiconductor devices, all other circuits to be protected through MPCBs/MCCBs/MCBs of suitable rating. HRC Fuses must not be used.	01 Set	Siemens/L&T/ Bussman	
1.4	Meters				
1.4.1	Energy Meter	Microprocessor based Energy Meter	01 No.	Reputed	

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1.4.2	Ammeters for Incomer	Analog Ammeters of suitable rating; one for each phase	03 Nos.	AE/MECO	
1.4.3	CTs	Current Transformers of suitable rating as per need	03 Sets	AE/KAPPA	
1.4.4	Voltmeters for Incomer	Analog Voltmeters of suitable rating; one for each phase	03 Nos.	AE/MECO	
1.4.5	Indicators	High Luminosity LED Based indicators for Phase live, Motor Run-Off-Trip and Various Faults of Machine, Drives & PLC	01 Set	Reputed	
1.5	Power Outlet Sockets	220V, 5/15 Amp Switch Socket, 01 No in five sections (All Heads & Table)	02 Sets	Reputed	
1.6	Panel Illumination	CFL/LED based, Door switch operated, Panel Illumination of rating suitable for sufficient illumination of the panel during maintenance work, in each section	01 Set	CFL/LED: Philips/Syska/CG	
1.7	Terminals & Wiring	All wiring including wires/cables within panel and from panel to the field devices. Within panel, all wires to be laid in suitable covered wiring (troughs/channels/trays). Between panel and field devices, all wires/cables are to be laid through suitable covered cable trays/drag chains/flexible reinforced conduits etc. All drag chains to be fully covered metallic drag chains. Between Panel and Field devices, atleast 10% extra wires must be laid. Distributed I/Os & Profibus communication are to be used to minimize no. of control wires.	01 Set	General purpose Wires/Cables:lapp/IIGUS/Finolex, Special Purpose Wires/Cables: lapp/IGUS or as specified by drive/PLC/ Encoder manufacturer	
1.7.1	Cable Lugs	All wiring termination to be through appropriately sized Copper Crimping Lugs.	01 Set	Reputed	
1.7.2	Cable Marking Ferrules	All wires (Power & Control) to be suitably marked with marking ferrules of appropriate size at each end.	01 Set	Reputed	
1.7.3	Cable Glands	All cabling to be done through Cable Glands, suitable for each individual cable. All cable entry to be through removable gland plate provided at the bottom of the panel.	01 Set	Reputed	

DETAILS OF ELECTRICAL ITEMS REQUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR THE RETROFITTING WORK OF SKODA MAKE HORIZONTAL BORING MACHINE WD 200

1.7.4	Cable Trays/Troughs/ Channels/Drag Chains /Flexible or Fixed Conduits etc.	Ref 1.7 above	01 Set	Reputed	
1.8	Control Supply	All Control and Auxilary Supplies to be derived from incomer 3- Ø, 3-Wire, 415VAC supply using suitable transformers / Rectifiers / Converters / Regulators / Power Supply Units etc. All contactors and relays except relays driven directly by PLC O/P to be at 220V AC. Relays driven by PLC O/P to be of 24V DC. All solenoids / electromagnets in existing machines and not being replaced, are to be driven by voltages as per existing scheme			
1.8.1	Control Transformers	Control Transformers of rating equal to min 125% of total control/auxiliary load connected to the transformer.	As per Need	Reputed	
1.8.2	Rectifiers/Converters/ Regulators	To provide various DC Power Supplies, including supplies to existing electromagnetic devices/ breaks as per existing scheme are to be installed in the panel. All such devices to be protected through suitable protective devices in accordance with 1.3 above	As per Need	Reputed	
1.8.3	Unstabilized DC Supply	This supply will be required for operation of Electromagnetic Solenoid Coils/Valve Controllers. there are 10 nos. such electromagnetic coils working at voltage 48VDC with a nominal load of 2Amps each. Supply to each such coil will be through a separate combination of MCB & Contactor. (Ref:clause 9)	02 Set	Reputed	

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2	PLC	Profibus enabled Siemens make Simatic S7-300 PLC including CPU, Centralized (for devices within panel) and Distributed (for devices in field) IO Cards, 144DI, 96DO, 8AI, 8AO, Power Supply Cards, Relay Cards, Profibus Cables. All hardware to be of same basic type. Hardwares with mixed basic types (e.g. CPU S7-300 with I/Os of S7-200) will not be accepted.	01 Set	Siemens	
2.1		The complete PLC Section will be housed in a separate compartment, isolated from Power and other control sections.			
2.2		This section will consist of all the components related with the PLC i.e. Power Supply, Microprocessor, IO Cards, Relay Cards and Terminal Blocks interfacing directly to PLC.			
2.3		All the wiring, from PLC Section to the other sections of the panel will be through terminal blocks only.			
2.4		One extra module each of DI, DO, AI and AO will be provided in the PLC section, pre-wired to the Terminal Blocks. (This is in addition to the DI,DO,AI,AO mentioined above at 2)			
2.5		There will be at least 15% extra terminal blocks provided in the section			
2.6	Relay Board	8-Channel, 2-Pole (2NO+2NC), relay boards, prewired to the terminal blocks/PLC los. There will be two nos. Relay boards provided as spare in the panel and prewired to the terminal blocks.	12Nos.	Same as make of PLC or Phoenix	

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3	<u>Auxiliary Motors</u>	All the existing AC Induction motors will be replaced with the new equivalent IE3 energy efficient motors as per following details.All the following Auxiliary motors are to be supplied and installed with proper mounting, coupling and wiring accessories. All the power ratings mentioned below are minimum ratings		Siemens/ABB/Mitsubishi/ Crompton Greaves/ Kirlosker	
3.1	Pendant Panel up & down Motor	0.56 KW, 1380 RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.		
3.2	Pendant Panel Forward & Reverse Motor	0.56 KW, 1380 RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.		
3.3	Head Stock/ Spindle Lubrication Pump Motor	0.75 KW, 1370RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor with Pump (12-15 Litre/min.).	01 No.		
3.4	Column Lubrication Pump Motor	0.18 KW, 1370RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor with pump (10-15 litre/min.).	01 No.		
3.5	RAM Lubrication Pump Motor	0.18 KW, 2700 RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor (10-15 litre/min.).	01 No.		
3.6	Column Gear Box Lubrication Motor	Flange Mounted, 0.05 KW,415V, 3-Ø, 1500 RPM,50Hz, AC, Squirrel Cage Induction Motor with pump (Discharge: 3-5 Litre/min.)	01 no.		
4	<u>Starter Section</u>	This will include MPCB-Power Contactor based DOL/RDOL starters for Auxiliary Motors as per following details. No motor circuit is to be provided with Fuse. All motors to be protected through MPCBs only.		Siemens/L&T	
4.1	Pendant Panel Up, Down, Forward & Reverse Motor	RDOL Starter suitable for 0.56 KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	02 Nos.		

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR THE RETROFITTING WORK OF SKODA MAKE HORIZONTAL BORING MACHINE WD 200

4.2	Head Stock/ Spindle Lubrication Pump Motor	DOL Starter suitable for 0.75 KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.		
4.3	Column Lubrication Pump Motor	DOL Starter suitable for 0.18 KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.		
4.4	RAM Lubrication Pump Motor	DOL Starter suitable for 0.18 KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.		
4.5	Column Gear Box Lubrication Motor	DOL Starter suitable for 0.05 KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.		
5	Position Feedback Devices	Pulse Encoder/Scale based, Digital Position Feedback Device for indicating position of Spindle In-Out (Z1-Axis),RAM In-Out (Z2-Axis), H/S Carriage (Y-axis), Column (X-Axis). This will include mounting devices, including any modifications in the existing system including couplings for the encoders in place of existing position feedback devices. Wherever such position feedback system is not available ,all necessary hardware required will be supplied & installed by the vendor along with any modification required. In case a Scale is offered, a suitable cleaning system is also to be provided. Travel for column X axis : 4000 mm Travel for Head Stock Carriage Y axis : 3150 mm Travel for Spindle Z1 & RAM Z2 axis : 1600 mm Resolution: 5 micron Accuracy: + - 10 micron	01 set	Siemens/ Hubner/ Heidenhein/ Fagor/ Elgo Electric/ Electronica	
5.1	Mounting Accessories for Postion Feedback Devices	All the accessories for mounting the motors and Encoder, like couplings/coupling Extension to suit existing shaft, mounting saddles, fasteners, keys etc. to be supplied. Mounting of Motors and Encoders to be done by party	01 Set for each Encoder		

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6	<u>Limit Switches</u>	All the existing limit switches are to be replaced with equivalent new limit switches with required necessary modification work.	25 Nos.	Reputed	
7	<u>Pressure Switches</u>	All the existing pressure switches are to be replaced with equivalent new pressure switches with required necessary modification work.	4 Nos.	Reputed	
8	<u>Solenoid Valves</u>	All the existing solenoid valves are to be replaced with equivalent valves preferably of 24V DC.	15 Nos.	Reputed	
9	<u>Pendant Panel</u>	Hanging Type Control Pendant for operation and control of the complete machine, including Cabinet, Distributed IOs, Push Button Actuators, Switches, Including Multi-Position Selector Switches, Any Control POTs, Indicators, Meters, Digital Position Indicators (DROs) etc. All the Position Feedback will be displayed either on Touch Screen or on DROs. One Emergency Stop Switch is also to be provided on the Pendant Panel in addition to the Emergency Switch provided in the main Panel. The Pendant Panel is to be supported using Wire Rope Sling, suitable for carrying the load of Pendant and Cables to Pendant. The cable entry to the pendant will be through top and through suitable cable hose. Pendant Panel must be able to move Up-Down and swing side-ways through the respective motors with control switches provided at the Pendant itself. The pendant panel will be able to give access to the operator over total control of the machine and also will include all indications related with operation and major faults in the machine.	01 Set	Panel Body: Rittal Dist IOs I: Same as PLC Switches etc.: Siemens/L&T Indicators: Reputed. The required material for pendant support mechanism to be supplied alongwith the pendant and to be installed.	
10	<u>Control Board</u>	Control Boards are to be provided as per existing control boards provided on H/S Carriage	01 Set	Switches etc.: Siemens/L&T/Schneider	

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11	<u>Machine Light</u>	The machine is to be provided with enough light using High Discharge Metal Halide Lamps of suitable rating (minimum 70W) for sufficient illumination of Job. Light fittings are to be provided with proper protection against chips.	02 Sets	Crompton Greaves/Philips/ Bajaj/GE	
12	<u>Encoder Cables for drive section</u>	Power Cable with end connectors: 6FX8002-5DA41-1CJ0 (01 no.); Encoder Cables with end connectors: 6FX8002-2CA31-1CJ0 (01 no.), 6FX8002-2EQ10-1CJ0 (01 no.), 6FX8002-2CA80-1CJ0 (01 no.).	01 set	Seimens/Lapp	
11	<u>Safety Arrangements:</u>	Following safety features in addition to other standard safety features should be provided on the machine:			
11.1		Machine should have adequate and reliable safety interlocks / devices to avoid damage to the machine, workpiece and the operator due to the malfunctioning or mistakes. Machine functions should be continuously monitored and alarm / warning indications through lights/ alarm should be available.			
11.2		A detailed list of all alarms / indications provided on machine should be submitted by the contractor.			
11.3		All the cables on the machine should be well supported and protected. These should not create any hinderance to machine operator's movement for effective use of machine.			
11.4		All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations.			
11.5		Emergency Switches at suitable locations as per International Norms should be provided.			
11.6		Oil lines should not run with electrical cable in the same tray / trench.			

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12	<u>Environmental Performance</u>	The Machine shall confirm to following factors related to environment :			
12.1		Maximum noise level shall be 85 dB(A) at normal load condition, 1 meter away from the machine with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16. Supplier to demonstrate compliance to noise level, if so required.			
12.2		There shall not be any emissions from the machine			
12.3		There should not be any effluent from the machine. In case there are any effluents from the machine, requisite effluent treatment plant or pollution control device should be built into the machine by the supplier.			
12.4		No hazardous chemicals shall be required to be used in the machine.			
13	<u>Tools & Tackles</u>	All the tools and tackles for installing the system including any special tools shall be arranged by the supplier. All the special tools and tackles will be retained by BHEL for the maintenance purposes. BHEL will provide if the need be and subject to availability, only EOT crane facillities, power and water for use during installation of the system			
14	<u>General Comments</u>				
14.1		The supplier shall provide a list of spares required for trouble free operation of the machine after completion of the work.			
14.2		All the switchgear components including MPCBs, Contactors, Overload relays, Push Buttons etc. shall be of Siemens/L&T make only unless otherwise specified.			

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR THE RETROFITTING WORK OF SKODA MAKE HORIZONTAL BORING MACHINE WD 200

14.3		All other components shall be of reputed make if not specified above. Vendor to mention exact make(s) for all the items for which specific make is not specified. CFFP reserves the right to			
14.4		All the drawings including structural and tentative circuit diagrams, shall be approved by BHEL, prior to commencement of manufacturing of the Panel/Desks/Stations etc. Drawings will be approved within 15 days of their submission to BHEL. However, increase in total time for drawing approval on account of incorrect drawings will not form a basis for increase in delivery time. Please also refer special terms and conditions.			
14.5		Mounting & position for the placement of Control Boards must be approved by BHEL before start of the installation work.			
14.6		The offer must include detailed BOM including make, type and rating of all the components. BOM of Spindle Motor must contain type no. with specification & for PLC module wise information of DI, DO. Offers without detailed BOM will be liable to be rejected			
14.7		After dismantling work of the old components from the machine, cleaning & painting of machine will be arranged by the contractor. New wiring & installation work of other components will be done then after only.			
14.8		IT IS STRONGLY RECOMMENDED TO ALL POTENTIAL BIDDERS TO VISIT THE PLANT AND THE MACHINE BEFORE BIDDING. ANY PRESUMPTION BY THE BIDDER REGARDING THE CONDITION OF THE MACHINE, ITS COMPONENTS ETC. SHALL NOT BE ENTERTAINED BY BHEL ONCE THE PRICES ARE FIRMED UP.			

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR THE RETROFITTING WORK OF SKODA MAKE HORIZONTAL BORING MACHINE WD 200

14.9		Vender has to supply all the material stated above in clause 1 to 8 even if it is not required in vendor's scheme for retrofitting. Any other material required for retrofitting of the machine and not covered here has to be supplied by vendor without any cost to BHEL.			
15	Documents:	Soft copy in a pen drive (Min. 16GB) with sytem backup and Three sets of hard Copy of final circuit diagaram & PLC Programm to be submitted after commissioning of the Machine.			
16	<u>Ambient Conditions</u>				
16.1	Max temperature	50°C			
16.2	Min temperature	0°C			
16.3	Relative humidity	97% max			
16.4	Altitude	300m above MSL			
	Note:	Spindle Motor, Feed motors & Drive section of machine is already replaced with Seimens motors & Seimens Simodrive. Details of dive section as follows: Seimens E/R Module: 80/104 KW, Seimens LT Module: 400A, Seimens LT Module: 2X50A. Vendor must place these existing Spindle & Feed Motor Drive Section on new cabinet for this, drives & Line choke will provided by BHEL rest of the material will be arranged by vendor.			

SCOPE OF WORK

For the Electrical Retrofitting of Horizontal Borer Machine WD200

The scope of work will consist of Design, Selection of Components, Procurement, Assembly, Supply and Installation of required material as per Specifications placed at Annexure A. The installation will consist of:

1. Dispatch of all the required material to Machine Shop, CFFP.
2. Civil work required, if any, should be communicated atleast 4 weeks in advance & before supply of material. All necessary construction drawings will also have to be supplied by the contractor along with this communication.
3. Dismantling, removal & shifting to a place, designated by the executive in-charge, Maintenance –Machine Shop, of all the existing Panels, Motors, MG-Sets, Control Desks, Pendants, Cables etc. at BHEL Hardwar and handing over the same to the executive in-charge, Maintenance –Machine Shop.
4. Painting of Machine similar to existing shade.
5. Mounting of all supplied Motors, Panels, Drives, Control Panels, Control Desks, Control Pendants, etc. at appropriate locations.
6. Laying of New Cables, including Power, Control & Signal Cables at appropriate locations and through proper Cable Routing Accessories like Drag Chains/Cable Hoses/Cable Laying Trays etc.
7. Inter connection of Panels, Cables and Field Devices including motors, drives, feedback devices etc.
8. Modifications of any nature including modifications in mounting devices of motors, encoders etc. as and wherever required, in a manner suitable for the best performance of machine in its present mechanical condition.
9. Cleaning of the work area after total installation work is completed.
10. Testing and proving out. This will include no load trial run, idle running for 24Hours as per BHEL requirement at the time of commissioning, load test etc.
11. Drawing and Supply of 4 Sets (3 Hard Copies and One Soft Copy in a suitable Media, preferably USB Flash Storage Device) of All the relevant drawings including but not limited to:
 - a. Complete List of Components used along with their designation in the circuit diagrams,
 - b. Complete Circuit Diagram, preferably in Standard German Format,
 - c. Complete Wiring Diagram, including Termination Details, Cable Identification Details, Cable/Wire Lengths & Locations and Cable/Wire Route etc.,
 - d. List of Parameters for each drive, individually,
 - e. Complete PLC Program in Ladder/STL Format including Process Logic, Input/Output/Flag Lists, Cross References etc.
 - f. Configuration Details of all special connectors etc.
 - g. Panel/Pendant/Desk Layout including layout of components within Panel/Pendant/Desk. Etc.

Note: Any work not covered in the scope of work but later found necessary for the completion of the project (limited to Electrical retrofitting) shall be executed by vender without any additional charges.

SPECIAL TERMS & CONDITIONS

This section details Special Terms & Conditions under which the contract is to be executed. These Terms & Conditions are in addition to the General, Safety and Other Terms & Conditions of BHEL, applicable to the Works Contracts, as per BHEL Works Policy. The Special Terms and Conditions applicable are as below:

A. For acceptance of the tender submitted by BHEL:

- a. All the bidders are recommended to visit the plant (CFFP) for a first hand appraisal of the machines. Any presumption regarding the condition of the machine, by the bidder, shall not be entertained at a later stage.
- b. It is necessary for all the bidders to submit their bids in two parts viz. i. Techno-Commercial bid and, ii. Price Bid.
- c. For all material part, all the components are to be of same make as specified under Annexure A. **Complete and detailed Bill of Material is to be submitted by the bidder** along with reference of Annexure A. Any deviation from the specified makes may result into rejection of the tender without any further communication.
- d. All the bidders have to specify the delivery schedule of material part of the contract in the technical bid. Normally accepted delivery period will be 18 Weeks from the date of issue of work order. Any deviation will attract loading as specified in Part I of this annexure. Also, this will form the basis for finalizing the date of handing over the machine to contractor, by BHEL, for the purpose of start of work.
- e. Bidders have to specify the time period required for dismantling of old and installation of new system, from the date of handing over the machine to them for the purpose of installation work, separately. The upper limit to this period will be 4 weeks. Any deviation will attract loading as specified in Part I of this annexure.

B. Pre-dispatch inspection (PDI):

- a. Pre-dispatch inspection of all the items covered under Scope of Supply Annexure-A shall be carried out by BHEL at party's works.
- b. Supplier shall invite BHEL for carrying out pre- dispatch inspection.
- c. Before inviting BHEL for pre-dispatch inspection vender will submit Bill of material for material under SOS with at least 7 days prior notice. Copy of electrical drawing/ schematic of machine to BHEL.
- d. Deputed BHEL persons shall do pre acceptance at vendor works and give dispatch clearance.
- e. Expenses of Boarding and lodging of BHEL personnel during PDI shall be borne by BHEL

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C. Earnest money deposit (EMD):

- a. Vendors have to submit EMD as mentioned in tender notice. EMD may be deposited in cash (as permissible under Income tax Act), through pay order or demand draft in favor of Account officer, CFFP, BHEL, Haridwar payable at Haridwar or may be credited through e-transfer in to SBI BANK A/C NO – 10667995469, IFSC: SBIN0000586, A/C Name CFFP/BHEL, RANIPUR, HARIDWAR with proper remarks containing purpose & name of depositor.
- b. EMD shall be converted to security deposit if the work is awarded.
- c. EMD of unsuccessful vendors shall be refunded back normally within fifteen days of acceptance of award of work by the successful vendor.
- d. EMD shall not carry any interest.
- e. **EMD by vendor will be forfeited as per tender document, if**
 - i. After opening the tender, the tenderer revokes his tender within the validity period or increases his earlier quoted rates.
 - ii. The tenderer does not commence the work within the period as per LOI/contract.
- f. **Offers without EMD will be rejected and will not be considered for evaluation. However valid NSIC certificate may be considered.**

D. At the award of contract:

- a. The successful bidder will have to submit a security deposit as per BHEL Works Policy, within 15 days of award of work. The rates are as here under:
 - i. Up to Rs. 10Lakhs : 10%
 - ii. Above Rs. 10Lakhs up to Rs. 50Lakhs : Rs. 1Lakh+7.5% of amount above Rs. 10Lakh.
 - iii. Above Rs. 50Lakhs : Rs. 4Lakhs+5% of amount exceeding Rs. 50Lakhs.
- b. Alternatively the 50% of Security Deposit must have to be submitted before start of the work. Balance 50% will be deducted from the first payment.
- c. Security Deposit is to be made in the form of Demand Draft/pay order drawn in favour of CFFP, BHEL, Haridwar, payable at Haridwar. This can also be submitted through Electronic Transfer (ECS)/ Bank Guarantee/ Fixed Deposit Receipt (FDR). The Bank Guarantee format should have the approval of BHEL. The FDR should be in the name of the contractor, A/C BHEL, duly discharged on the back.
- d. EMD of the successful tenderer can be converted and adjusted against the security deposit.

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- e. If vendor fails to submit the Security Deposit within specified time frame the Work Order may be treated as cancelled.
- f. The security deposit shall not carry any interest.
- g. The machine will be handed over to the contractor for a period not exceeding 2 days (including intervening Sundays/Holidays) for the purpose of getting measurements for development of such mounting devices. This activity will necessarily have to be carried out by the contractor within 12 weeks of award of the Work Order or before dispatch of material from their end, whichever is earlier.
- h. The exact time of handing over the machine to the successful bidder (contractor) by BHEL for the purpose of work, will be intimated to the contractor along with the work order or at a later stage after confirmation from the contractor regarding readiness of all mechanical items as required for mounting of motors, feedback devices etc. and the contractor will have to start the work within a week's time from the stipulated date of start of work. The work can be started only after deposit of the Security Deposit as mentioned at D.a above. The time of handing over the machine for retrofitting/reconditioning work by BHEL will however not bear any implication on the supply of material part.

E. For the purpose of execution of work at BHEL:

- a. All the bidders have to ensure that all their workmen, proposed to be engaged for the work within BHEL Premises are covered under PF & ESI for the duration for which work is to be carried out or the Vendor must have to submit a notarized affidavit to the effect that by virtue of no of employees being less (less than 20 for PF & less than 10 for ESI) exemption from PF and/or ESI is applicable. In such a case, the vendor will not be allowed to deploy employees, in number, more than the numbers as applicable at any point of time during the execution of the work in BHEL Premises and Vendor will also ascertain the same in the same affidavit. **While execution of the work all the labor laws will be followed by the vendor.**
- b. All the material required for the execution of work will have to be supplied by the contractor to CFFP, BHEL before handing over of the machine to the contractor. All such material is liable to be inspected by BHEL either at the works of the contractor (before dispatch) or at CFFP after receipt of material. In case the material is inspected at CFFP, the same will be done within a week's time from the date of receipt of complete set of material.
- c. BHEL, for the works being carried out within BHEL factory premises, will provide only following facilities to the contractor, free of cost:
 - i. EOT Crane along with crane operator, as per requirement and availability,

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ii. Electricity & Water

iii. Welding Machine, Maximum one no., subject to availability,

Welders and all consumables will have to be arranged by the contractor at their own cost.

- d. All the dismantling work of machine will be carried out by the contractor in presence of the executive in charge of Maintenance-Machine Shop or other BHEL representative, deputed by Head of Department, Maintenance & Services Department.
- e. BHEL, at its discretion, may inspect some or all the components before their dispatch from the contractor's works.
- f. While working within BHEL factory area, the contractor will use their own tools, tackles and safety equipments except EOT Crane and Welding Machine. Any Tool or Tackle which may be required for maintenance of the reconditioned/retrofitted machine in future will be retained by BHEL after acceptance of machine by BHEL.

F. Payment Terms:

- a. 80% of material cost along with 100% taxes & duties (Excise duty, CST/VAT as applicable) after receipt of material at CFFP, BHEL, and its inspection and acceptance at CFFP. Balance 20% of material cost along with Security Deposit & Cost of installation & proving out will be paid after completion of commissioning work & acceptance of machine by BHEL (Also refer Clause G below) after submission of Performance Bank (PBG) Guarantee of 10% of contract value. If vendor fails to provide the PBG for the required value, the payment will be made deducting the PBG amount.
- b. All the payments shall be made through e-payment after submission of following documents along with first bill.
 - i. E-payment form duly filled (Form will be provided by BHEL)
 - ii. Income tax exemption letter(if applicable)
 - iii. Excise duty & CST/VAT will be paid on material cost and service tax will be paid on commissioning charges at actual. Related original documents to be submitted for availing MODVAT credit by BHEL.
 - iv. Timely submission of CENVATABLE invoices along with necessary documents to enable availment of CENVAT (Excise duty, Service Tax & VAT) credit by BHEL.

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Note: Wherever CENVAT credit cannot be availed within given time limit due to delay in submission of invoices or for any other reasons attributed to vendor, loss of such CENVAT credit will be recovered from such vendor.

- c. Invoices will be raised separately for material & commissioning.
- d. Form "C" will be issued against CST after acceptance of Material at BHEL.
- e. No advance payment will be made by BHEL.
- f. Proof for Service Tax deposit is must to submit for the payment of commissioning charges.

G. Penalty Clause:

- a. A delay in handing over the machine to BHEL, by the contractor, beyond scheduled date as specified in the Work Order or otherwise shall attract a penalty of 0.5% per fortnight or part of that, subject to a maximum of 10% of contract value. Penalty will be calculated based on total time period taken by the contractor for supply of material and execution of the installation work. The total period of execution will be calculated from issue of work order to handing over the machine to BHEL less any time taken by BHEL for handing over the machine to contractor for installation work.

H. Guarantee/Warranty:

- a. The contractor will provide a guarantee/warranty of minimum 24 months for all the material supplied under this contract and also the retrofitted system as whole. Any deviation from the specified period will attract loading as detailed in part I of this annexure. In any case, guarantee/warranty less than 12months will not be acceptable. The guarantee/warranty will be supported by submission of a Performance Bank Guarantee of 10% of contract value. The guarantee/warranty period will start immediately after the acceptance of machine by BHEL.
- b. If breakdown of the machine is not responded within 48 hrs during the guarantee/warranty period, the guarantee/warranty period will stand extended for double the corresponding period.
- c. Breakdowns not attended during the guarantee/warranty period will lead forfeiting of PBG.

I. Reverse Auction (RA):

- a. BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give

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their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

- b. In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder will be considered as tampering of the tender process & will invite action by BHEL as per extant guidelines in vogue.
- c. For reference Terms & Conditions of Reverse Auction are given in Annexure-E.

J. Acceptance of Machine as commissioned:

- a. The machine will be verified through joint inspection by BHEL & Contractor for the acceptance of the machine as per the verification parameters placed at Annexure F.
- b. The machine, after commissioning will be put to production activities for a period of one week during which the machine must be able to operate uninterruptedly. During this period, the contractor will ensure that any snag in the machine is rectified immediately.
- c. The contractor will have to submit a bank guarantee of 10% of total contract value for a period equal to guarantee/warranty period from the date of final acceptance of the machine as performance guarantee for the reconditioned/retrofitted machine.

K. Risk Purchase:

- a. In case of delays in supplies / defective supplies or non-fulfillment of any other terms & conditions given in the work order the purchaser may cancel the work order in full or part thereof and may also make the purchase of the material / service from elsewhere / alternative source at the risk and cost of supplier. If vendor does not agree to above clause, their offer is liable to be rejected. In case any vendor accepts risk purchase clause initially and subsequently declines to honor the term in the eventuality of RISK PURCHASE, they may be banned for business with BHEL.

L. Deviations and Loading:

- a. Loading will be calculated on the total price offered by the bidder and the total loaded price will be used for identifying the L-1 bidder.
- b. In case, after loading, two bidders are found to be at exactly same price, the actual offered price will be considered for comparison.

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- c. The loaded price will be used only for comparison purposes. Loading will not affect the work order price which will be the quoted price or the negotiated price whichever is less.
- d. Deviations other than those mentioned at I.e below will not be accepted by BHEL.
- e. Loading against various deviations will be as detailed below, the total loading will be sum of all the three loading factors:

Sl. No.	Clause No.	Deviation allowed with Loading	Rate of Loading	Remarks
1.	A.e	Bidder may offer a delivery longer than 18 weeks for material supply part but in no case more than 24weeks	@1.25% per week (or part thereof) above 18 weeks subject to a maximum of 5%	Delivery period more than 24 weeks will not be acceptable in any case.
2.	A.f	Bidder may offer Execution period of more than 4 weeks for work part but in no case more than 8 weeks	@1.50% per week (or part thereof) above 4 weeks subject to a maximum of 5%	Execution period more than 8 weeks will not be acceptable in any case.
3.	F.a	Bidder may offer a guarantee/ warrantee period of less than 24months but in no case less than 12months from the date of acceptance of machine by BHEL.	@0.5% per month (or part thereof) below 24 months subject to a maximum of 5%	Guarantee/Warrantee of less than 12months from the date of acceptance of machine by BHEL will not be acceptable in any case.

VERIFICATION PARAMETERS FOR HORIZONTAL BORER WD200

Following points will be verified through joint inspection by BHEL & Contractor for the acceptance of the machine.

A. Different functionality of Machine as per following list is to be demonstrated by the contractor in idle & load running condition.

Sl. No.	Function
A.1	Movement of Lower Saddle in X- Axis & position display on DRO
A.2	Movement of Head Stock Carriage in Y- Axis & position display on DRO
A.3	Movement of Spindle & RAM in Z- Axis & position display on DRO
A.4	Rotation of Spindle
A.5	Movement of Pendant Panel laterally & vertically
A.6	Running of all the lubrication & hydraulic motors
A.7	Machine Lights on/off

B. The contractor will have to demonstrate all the feed rates & RPM as per the following table in idle & load running condition.

Sl. No.	Feed Rates/RPM	Range
B.1	Feed for Lower Saddle X-Axis	1.6-1600 mm/min
B.2	Feed for Head Stock Carriage Y-Axis	1.6-1600 mm/min
B.3	Feed for Spindle Z1-Axis	1.6-1600 mm/min
B.4	Feed for RAM Z2-Axis	1.6-1600 mm/min
B.5	RPM of Spindle	1.5-630
B.6	RPM of Spindle with RAM	1.6-300

C. All the wiring with ferrules & proper dressing of cables & wires.

D. Interlocking of limit switches, pressure switches & lubrication motors.

E. Compatibility of display with actual feed rates & Spindle RPM in different gears.

F. All the Meters & Indicators in working condition.

Terms & Conditions of Reverse Auction

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL is going for REVERSE AUCTION PROCEDURE i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.

2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.

3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.

4. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.

5. Bidders have to email / fax the Compliance form (annexure II) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.

6. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.

7. Reverse auction will be conducted on scheduled date & time.

8. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

9. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure III) as provided on case-to-case basis to Service provider within two working days of Auction without fail.

10. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.

11. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.

12. If the Bidder or any of his representatives are found to be involved in Price manipulation / cartel formation of any kind, directly or indirectly by communicating with other bidders, action as *per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped / aborted.

13. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.

14. BHEL reserves the right not to allow the H1 bidder(s) (whose quote is highest in online sealed bid) to participate in further RA process.

PRE-QUALIFYING CRITERIA

This section details minimum requirement on part of the bidder for the Electrical Retrofitting of Horizontal Borer Machine WD200 in Machine Shop. In general, the bidder must satisfy following criteria:

1. Average annual financial turnover for the last 3 financial years ending 31st March (i.e. for the financial years 2012-13, 2013-14 and 2014-15), must be not less than ₹ 15 Lakhs.
2. Bidder must submit proof of having carried out successfully work of similar nature during last 7 years ending last date of the month previous to the one in which NIT for this work is issued. Similar work means “Retrofitting of Machine Tools” OR “Reconditioning of Machine Tools” OR “Renovation of Machine Tools” OR “Modernization of Machine Tools” where Thyristor Drive or PLC must be a part of the above work.
3. The value of such works must be:
Not less than ₹ 10 Lakhs for each of minimum three similar completed works with any organization of repute but not the bidders own organization
OR
Not less than ₹ 12 Lakhs for each of minimum two similar completed works with any organization of repute but not the bidders own organization
OR
Not less than ₹ 20 Lakhs for each of minimum one similar completed works with any organization of repute but not the bidders own organization
As a proof, completion/commissioning/performance certificate(s) from the original client(s) must be submitted. Any work supporting or facilitating to above work will not be considered.
4. **Compliance to Govt. Rules:** The bidder must have proper registration for PF, ESI, Income Tax, Service Tax etc. as per Govt. Rule. The bidder shall also have to comply with the Government as well as BHEL rules and regulations. Bidder has to fill & submit the enclosed Performa.
5. Documents supporting the aforementioned qualifying criteria **MUST** be submitted by the bidders along with the Techno-Commercial Bid. **If it is found at any time that the particulars submitted by the contractor are false, suitable action will be taken. This may lead to cancellation of contract/registration from all the BHEL units & forfeiting of Earnest Money Deposit (EMD) /Security Deposit (SD).**
6. Bidder must submit Earnest Money Deposit (EMD) along with Techno-Commercial offer. In case the EMD is not submitted with techno-commercial offer or less than that specified in NIT, tender will be rejected without any prior notice and any amount deposited will be forfeited.
7. Bidder’s acceptance for opening price bid through reverse auction process must be submitted. However, BHEL may opt to decide L-1 through Reverse Auctioning or by opening the price bid.

8. Following checklist to be filled by the bidder.

Sl. No.	Required Data	To be filled by the bidder	Remarks of Bidder for supporting documents (Enclosed/Not Enclosed)
1.	PF Registration No		
2.	Service Tax Registration No		
3.	PAN No.		
4.	ESI Registration No		
5.	Documents as per clause 1		
6.	Documents as per clause 2		
7.	Documents as per clause 3		
8.	Average Turnover of last three years 2012-13 2013-14 2014-15		
9.	Value & Year of Similar Contract/s Work Order as per clause 3		
10.	Earnest Money (DD No.)		
11.	Acceptance for Reverse Auctioning		