

RETROFITTING & RECONDITIONING OF VA50 VERTICAL MACHINING CENTER.		
ANNEXURE-III		
SCOPE OF WORK		
S.No	Description	Vendor's Remarks / Compliance
1	Removing of existing AC spindle motor, three numbers of AC servo motors and its drives along with coupling and pulley and note down all the parameters, inter connections of power, control and signal cables.	
2	Fixing of the new AC spindle motor and three numbers of AC servo motors with new mounting brackets and couplings.	
3	Installation and Commissioning of the New CNC system, drives, motors, lubrication pumps, systems etc.	
4	Erection of the new operating pendent and mounting the CNC system.	
5	Fixing of external encoders and interfacing it to the new CNC system..	
6	Mounting of X,Y, Z axis and spindle drives in the control panel.	
7	Inter connecting the CNC signals with the machine electrical elements I/O, Feedback, command and other signals.	
8	Erection and commissioning of the new control Panel with switch gears and Interfacing the machine control elements like limit switches, pressure switches, level switches ,pushbuttons etc., with the new controls in this new control panel with required wiring materials.	
9	Replacement of all limit switches and sensors in the machine.	
10	Commissioning of voltage stabilizer.	
11	Installation of X, Y and Z axis ballscrews with end support bearings. Y axis ball screw rod will be provided by BHEL free of cost at site.	
12	Installation/Commissioning of coolant (immersible) pump and proper line connection.	
13	Installation of new guideway wipers for all axes.	
14	Installation/Commissioning of hydraulic pump for power pack.	
15	Assembly of all high pressure hydraulic hoses along with suitable end fittings.	
16	Installation of all supplied valves on the machine.	
17	Installation and prove out for smooth operation of supplied telescopic and lamino bellow covers.	
18	Assembly/Prove out of supplied chip conveyor gear box.	
19	Assembly/installation and prove out of centralized lubrication pump and systems with piston distributor and required copper/nylon tubings.	
20	Assembly/Prove out of supplied head stock lubrication circulation pump.	
21	Assembly of supplied hydraulic fittings and to ensure leak free operation of machine.	
22	Installation of all other supplied materials.	
23	Developing and prove out of PLC software to incorporate all the existing machine functions. The complete system will be integrated and should be proved out by the supplier for performance with a standard test piece and also regular production components	
24	Laser calibration of X, Y & Z axes (before and after the work) and generation of compensation data for pitch error and backlash.	
25	Prove-out of all the functions of the machine. Demonstration of all programming features of new CNC System .	

26	The complete system will be integrated and proved out for performance With a standard test piece and also two regular production components.	
27	DOCUMENTATION: Three sets of the following documents will be supplied along with the retrofitting packages.	
	1) Original CNC system manual, drives manual ,motors catalogues and also For the other bought out items.	
	2) Original programming manual for the CNC system	
	3) Original CNC Interfacing/ Installation/ Diagnostics Manuals.	
	4) Drives commissioning/ Trouble Shooting manuals for spindle and feeds.	
	5) Complete Electrical and Electronics wiring diagram and mechanical component details as per retrofitting / modification.	
	6) Hardcopy of PLC programs / machine Data / Alarm Text messages.	
	7) Complete spares directory and bought out itemns list.	
28	BACK UP: The back up of PLC program and parameters to be given in CD as well as in flash card compatible with the CNC system.	
29	TRAINING:	
	Training shall be given for 2 Maintenance personels on CNC/ Drives maintenance & for 2 Production personels on Operation and Programming of the CNC at the OEM's works for 5 days.	
	Training to be imparted to BHEL personels on operation, programming and maintenance of the CNC machine at BHEL for 2 days.	
30	GENERAL CONDITIONS:	
30.1	The equipments should be suitable for 415V, 3ph, 50Hz, a.c. supply	
30.2	Vendors (except OEM of the machine) MUST visit HPBP BHEL, Tiruchirappalli, study the existing machine and assess the work content before submission of quotation. Only such vendors shall be considered for technical evaluation.	
30.3	Any material not specified in the scope of supply but required for successful commissioning of the supplied electrical and mechanical materials is in the scope of the contractor.	
30.4	Materials to be used should be of reputed make or as per IS standards.	
30.5	Party shall bring all tools and testing equipment with them during erection and commissioning.	