

	<u>BHARAT HEAVY ELECTRICAL LIMITED</u>			Enquiry No. :	
	<u>UNIT'S ADDRESS:</u>			Due Date :	
	<u>CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL</u> <u>(FROM PURCHASE DEPTT.)</u>			Supplier Qtn. No.:	
				Date :	
<u>SPECIFICATION CUM COMPLIANCE CERTIFICATE OF DC DRIVE PANELS & PROGRAMMABLE LOGIC CONTROLLER WITH SCADA PACKAGE FOR HYDRO LAB</u>					
	NOTE:-				
	1. Vendor must submit complete information against clause no. 10. The offer meeting this clause would only be processed.				
	2. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.				
	3. The offer and all documents enclosed with offer should be in English language only.				
NAME & ADDRESS OF THE SUPPLIER :		NAME & ADDRESS OF THE INDIAN AGENT :			
TELEPHONE NOS.:		TELEPHONE NOS.:			
FAX NOS.:		FAX NOS.:			
E-MAIL ADDRESS :		E-MAIL ADDRESS :			
SCOPE: SUPPLY, ERECTION & COMMISSIONING OF DC DRIVE PANELS & PLC WITH SCADA PACKAGE COMPLYING WITH SPECIFICATIONS AS BELOW					

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS
1.0	PURPOSE & REQUIREMENTS				
1.1	<p>Purpose: Hydro-Laboratory has two test beds which are used for performance evaluation testing of scaled down model of Hydro Turbines. The test setup comprises of two 360KW DC machine (one for each test bed) which is coupled to the turbine model and acts as a dynamometer. In addition to them there are two more 360KW DC Machines which drives two independent water pumps (Pump1 & Pump2) which are used for generating water heads required for running of the turbines. These pumps are common for the two test bed with limitation that testing is possible at one test bed at a time. There are auxiliaries like valves, energy dissipaters etc and assortment of sensors, transducers which constitutes the complete setup.</p> <p>The complete control and monitoring of the setup is carried from a centralized control room. It comprises of push buttons, Indication Lamps, Analog Meters for control of a) Four DC Drive system (Pump1, Pump2, Test Bed 1 & Test Bed 2), b) Pump auxiliaries valves, energy dissipaters and others functions. The devices are wired in a conventional relays based interlocking scheme which is in-turn is integrated into respective co system of DC Drives and other auxiliaries</p>	Vendor to confirm			

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1.2	<p>Requirements: It is required to design, configure and commission the following systems:</p> <p>a) Two separate control panel, each having latest 1200 Amps 4-quadrant Digital DC Drive, its auxiliaries for control of two 360 KW DC Motors acting as dynamometer in Test-Bed 1 & Test-Bed 2. This shall replace the old/obsolete four-quadrant, ABB make analog type DC Drive panel.</p> <p>b) A Programmable Logic Controller & PC based SCADA package for Control Desk. PLC will replace the entire relay based interlocking scheme at control desk and SCADA package will be used for control and visualization of complete testing setup.</p> <p>c) Integration of 2 Nos. DC Drive panels of Pump 1 & Pump 2 with the SCADA System. These panels have 1200 Amps Siemens make DC Drive type 6RA70.</p> <p>The system will comprise of following</p>	Vendor to confirm			

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2.0	SPECIFICATIONS & SCOPE OF SUPPLY:				
2.1	DC DRIVE PANEL FOR TEST-BED 1 & 2: 2 NOS.	Vendor to confirm			
	<p>The offered DC Drive shall be suitable to start the motor either in motoring or generating mode as per testing of requirements. The drive is also required to switch between converting or regenerating mode automatically depending on the load on motor. The bidder may study the functioning of the test setup before offering. The specifications of existing DC machine to be controlled by the drive are as follows:</p> <ul style="list-style-type: none"> a) Make BBC b) Type GN355S33F c) Power 360kW d) Rated Voltage 440VDC e) Rated Current 874 Amps DC f) Field: Current/Voltage 17.3 Amps/285 Volts g) Minimum Speed 50 RPM h) Rated Speed 1000 RPM i) Maximum Speed 2600 RPM <p>Each drive panel shall consist of the following:</p>	Vendor to confirm			

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2.1.1	1200 Amps, Four Quadrant, Digital DC Thyristor Drive: The DC Drive shall be of either SIEMENS/ALLEN-BRADLEY/ABB make only. It shall have following specifications:	Vendor to Specify			
	a) Communication: The drive will be controlled by the control desk based SCADA PLC (Specifications of PLC as per point 2.2 below) over a data bus (Profibus or its equivalent) . All the hardware required for above communication will have to be supplied.	Vendor to Specify			
	b) Input supply: 415V \pm 20%, 3 phase, 3 wire, 50 Hz	Vendor to confirm			
	c) DC Output : 440VDC, 1200Amps, continuous	Vendor to confirm			
	d) Field Output: 320 VDC, 30 Amps	Vendor to confirm			
	e) Mode of operation: Continuous duty, 4-quadrant with field weakening	Vendor to confirm			
	f) Speed regulation : 0.1% of base speed through digital tacho feedback	Vendor to confirm			
	g) Braking Regenerative	Vendor to confirm			
	h) Digital Inputs: Minimum four, fully configurable	Vendor to Specify			
	i) Digital Outputs: Minimum two, fully configurable, potential free	Vendor to Specify			
	j) Analog Inputs: Minimum two, (+/- 10V DC or 4-20MA selectable)	Vendor to Specify			
	k) Analog Outputs: Minimum two, (+/-10VDC)	Vendor to Specify			

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	I) Features of Digital DC Drive: i) The controller must be compact and modular in construction. ii) It shall be microprocessor based digitally controlled, Three-phase fully controlled reversible bridge configuration, capable of bi-directional operation with regenerative braking. iii) The field controller and field-bridge shall be integrated in the drive module and shall be capable of field weakening operation. The plotting of field characteristics for field weakening operation shall be automatic during auto-tuning procedure. iv) It shall have an inbuilt/detachable programmer for parameterization & display. v) It must have all standard protections like stall protection, instantaneous power failure, single phasing, phase rotation, over voltage, under voltage, over current, thermal overload etc. All faults and operating conditions must be displayed on suitable seven segments /alpha-numeric display. vi) It must have auto tuning facility. This must enable perfect matching of motor coupled to load with regards to optimum acceleration time, deceleration time, speed amplifier, current amplifier, output torque control etc. All parameters for drive control should be programmable type.	Vendor to confirm			
	Drive Operational Controls: The drive shall be operated normally from an existing Control Desk (Either existing push buttons and other devices on control desk or SCADA PC). In addition to above, provision shall be made in the panel for local operation of the drive. All necessary devices shall be provided on the panel fascia for the same. A Key operated Local/Remote selector switch shall also provided to transfer the operational control from control desk to panel and vice-versa.	Vendor to confirm			

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2.1.2	Programmable Logic Controller (PLC): This will be required for interlocking of auxiliaries of DC Drive, logic for local operation of drive from panel. It shall be suitable for communicating with SCADA PLC of control desk for remote control of drive and its auxiliaries. It shall be a compact unit having integrated Power Supply, CPU, Communication port, Programming port and following Inputs/Outputs	Vendor to Specify			
	Digital Inputs (24VDC): 16 Nos	Vendor to Specify			
	Digital Outputs (24VDC): 16 Nos.	Vendor to Specify			
2.1.3	Enclosure for Drive & its Auxiliaries : This enclosure shall be of RITTAL make only and IP42 grade. It shall have cubicle ventilation fan, louvers with dust cover for ventilation etc. It will house the above DC Drive, PLC and following accessories:	Vendor to Specify			
	a) Incomer Switch fuse unit (SFU).	Vendor to Specify			
	b) 3-phase AC Line choke for DC Drive (<i>Choke of existing panel is available and shall be used</i>)	Vendor to Specify			
	c) Semiconductor fuses for 3-phase AC Input & DC Output, Field Input & Field Output of the Drive	Vendor to Specify			
	d) AC Line contactor for drive	Vendor to Specify			
	e) 3-phase AC feeder for four nos. of motor blower fans of rating 2.2Kw, 415V, 4.5 A.	Vendor to Specify			
	f) 24VDC SMPS Power Supply for PLC Inputs/Outputs, Relays, Indicating lamps etc.	Vendor to Specify			
	g) Indicator lamps for Mains On, Control On, Drive Fault & Drive Run.	Vendor to Specify			
	h) Analog meters for displaying Mains Line Voltage, DC Armature Voltage, DC Armature Current, Motor Field Voltage & Motor Field	Vendor to Specify			
	i) Push buttons for Local/Remote selector, Control on, Control off, Emergency Stop, Fault reset, Drive Start, Drive Stop, Fwd/Rev Selector Switch, 10-Turn potentiometer for speed setpoint,	Vendor to Specify			

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2.1.4	Digital Encoder: Digital Encoder of 1024 pulse for closed loop control of drive with a accuracy of 0.1%. Note: Encoder shall be of HUBNER/SIEMENS/ALLEN-BRADLEY/HEIDENHAIN/ABB make only.	Vendor to Specify			
2.2	PROGRAMMABLE LOGIC CONTROLLER (PLC), PC BASED SCADA PACKAGE & PLANT MIMIC DISPLAY FOR CONTROL DESK: 1 SET..	Vendor to confirm			
	<p>This package will integrate all the devices of control desk, replicate all the existing interlocks and will provide the following functionalities:</p> <p>a) Complete control of the test setup from the existing control desk in the manner similar to present usage.</p> <p>b) Complete control of test setup from a SCADA PC to be provided.</p> <p>c) Conversion of present hardwired LED based plant MIMIC to a Touch panel MMI and add features to depict additional features and information.</p> <p>d) Integration of DC Drive panels of Pump1 & Pump2</p> <p>A key operated control transfer switch shall be provided to transfer plant control from SCADA PC to Control Desk and vice-versa. However all the indications (Lamps, meters etc) shall be functional at both the locations irrespective of the selection of control location.</p> <p>The system will consist of the following:</p>	Vendor to confirm			

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2.2.1	<p>Control Desk mounted PLC Rack: This will be used to terminate all devices of this desk (Push buttons, Indication Lamps, Analog Meters etc), Control and interlocking of all auxiliaries (Different sensors, potential free feedback from various auxiliaries panels. Acutuation of devices like butterfly valves, breakers of electrical switch yard, energy dissipaters etc) of the test plant. It shall have the following features:</p> <p>i) Program memory: Sufficient memory to program I/O as mentioned below.</p> <p>ii) Backup memory: Flash MMC submodule.</p> <p>iii) Processing time: 0.6ms/1024 statements(Max.)</p> <p>iv) Program processing: Cyclic, Interrupt driven</p> <p>v) Instruction type: Binary logic, bracketed operation, Result assignment, bit memories, counting, timing, transfer, comparison, jump, block call, special function, word logic, arithmetic etc</p> <p>vi) Power supply 24VDC/230VAC</p> <p>vii) Communication ports: Capability for control/data transfer with a) Industrial PC based SCADA system, b) 19” Touch Panel for depiction of plant status in a MIMIC diagram, c) 4 Nos. of 1200 Amps DC Drive, d) 4 Nos of compact PLC located (one each) in the 4 Nos drive panels</p> <p>viii) PLC programming port: Suitable for communicating with USB port of standard PC.</p> <p>Note: PLC shall be of either SIEMENS/ALLEN-BRADLEY/SCHNEIDER/ABB make only.</p> <p>Other configuration shall be as follows:</p>	Vendor to Specify			

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	a) PLC Power Supply Module	Vendor to Specify			
	b)PLC CPU together with Profibus/equivalent communication port/module for control/data transfer with devices as mentioned above.	Vendor to Specify			
	c) Digital Inputs (24VDC): 150 Nos	Vendor to Specify			
	d) Digital Outputs (24VDC): 96 Nos.	Vendor to Specify			
	e) Analog Inputs (+/-10VDC, 4-20mA) normal resolution (8 bit): 8 Nos.	Vendor to Specify			
	e) Analog Inputs (+/-10VDC, 4-20mA) high resolution (16 bit): 8 Nos.	Vendor to Specify			
	f) Analog Outputs (10-0-10VDC): 18 Nos	Vendor to Specify			
	g) PLC programming adapter and cables suitable for USB port of PC	Vendor to Specify			
2.2.2	SCADA Control Station: This will form an alternative mode for controlling the test plant setup The SCADA stations shall be a Panel PC and a high end licenced SCADA package as per the configuration given below	Vendor to confirm			
2.2.2.1	Panel PC: The SCADA station hardware shall be Simatic Panel PC 477B or its equivalent and having the following features: a) Compact design for mounting in cabinets and consoles b) Degree of protection IP65, NEMA 4 (front) c) Rugged metal housing d) High electromagnetic compatibility e) Vibration resistance during operation: 0.25g f) Shock resistance during operation: 1 g g) MTBF for back-lighting: 50.000 h at 24-hour continuous operation Note: Panel PC shall be of either SIEMENS/ALLEN-BRADLEY/SCHNEIDER/ABB/ADVANTECH make only.	Vendor to Specify			

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	<p>The specification of Panel PC shall be as follows:</p> <p>i) Processor: Intel Core 2 Duo Mobile processor suitable for 24Hrs continuous operation</p> <p>ii) Operating System: Windows XP Professional.</p> <p>iii) Main Memory Media: Flash Drive 4GB, additional second flash drive 4GB</p> <p>iv) Networking: MPI/PROFIBUS.</p> <p>v) Connectivity:</p> <ul style="list-style-type: none"> - 1 x USB 2.0 interface on the front - 4 x USB 2.0 interfaces on the back - 2 x PCI-slots equipped with special retainers - 2 x LAN 10/100/1000 Mbit/s interfaces (Gigabit-LAN) - DVI-I interface (for VGA and/or DVI-D monitor) - 1x serial <p>vi) DVD±RW±R combo drive</p> <p>vii) Display 19.1" TFT- Color Touch screen, Resolution: 1280 x 1024 pixels.</p> <p>viii) External optical USB/BLEETOOTH mouse.</p> <p>ix) Standard Industrial duty keyboard</p> <p>x) Repair & spare parts availability: Minimum 5 years</p>	Vendor to Specify			

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2.2.2.2	<p>Software SCADA Package: The system shall be configured/customised on a licenced high-end SCADA package of minimum 1000 tags for real time data logging & supervisory control. It shall be capable of I/O management, distributed logging, historical & real time trending, built-in security, configurable networking features, OLE for process control etc. The application package shall be ergonomically designed, user-friendly for comprehensive monitoring & control of test setup. It shall contain user specific, menu driven graphical screens for control & supervision of the plant. They shall contain control command (start, stop, speed set value), measuring values(ie current, voltage, speed etc), status information of systems(alarms), alarm list, trends displays for analogue values, security system to prevent unauthorized use etc.</p> <p>Note: Copies of such screens, reports etc developed for similar application shall be submitted along with the offer. Parties having prior experience in design & development of such system will only be considered.</p> <p>Note: SCADA Package shall be either WINCC/ RSVIEW/ LABVIEW/CITECT/ABB</p>	Vendor to Specify			

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2.2.3	<p>Plant MIMIC Display: A LCD monitor of minimum 19inch is required for depiction of plant MIMIC diagram. This shall replace a existing hardwired system having LED's and additional functionalities shall be added to it to make it more versatile (fields with analog, digital tags to be added).. This shall communicate with PLC and will be used for depiction of plant status in a MIMIC diagram. It shall have the following features:</p> <p>a) Display: TFT Liquid crystal display(LCD), 64K colors, Minimum screen size of 19 inches or more</p> <p>b) Resolution: 1280 X 1024 or better</p> <p>c) Control element: Touch screen.</p> <p>d) User memory: Minimum 12 MB.</p> <p>e) Process Screens: Minimum 64.</p> <p>f) Tags: Minimum 1000.</p> <p>g) Visual Basic scripts: Yes.</p> <p>h) Communication: Industry Standard protocol, compatible with PLC</p> <p>i) Input Supply 24Volts DC/ 220VAC</p> <p>j) Engineering Software: Licenced copy of package shall be supplied.</p> <p>Note: MIMIC Display shall be of either SIEMENS/ALLEN-BRADLEY/ SCHNEIDER/ABB/ADVANTECH make only.</p>	Vendor to Specify			

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2.2.4	Accessories for control desk: a) PLC Output Isolation Relays suitable for all above 96 digital outputs. These relays shall Phoenix Contact make PLC relay having a minimum contact rating of 220VAC, 10 Amps. b) 24 VDC, 10Amps SMPS Power Supply for PLC Inputs/Outputs d) 110VAC and 48 VDC supplies are to be retained. Feeders for distribution of these supplies in various circuits will however have to be provided. c) Protection fuses for distribution of 24VDC to different devices/circuits. d) Cable trays, DIN rails, Terminal Blocks, Control fuses, Single core cables of (0.25 sqmm, 0.5 sqmm, 1.0 sqmm) for contrl desk wiring, Lugs, Ferules etc as per requirements. e) Data cable for communication between, PLC, PC, MMI, Drives etc: 200 m approximately. f) LAPP make conduit of 10mm dia. for laying the data cable to various devices: 200 m.	Vendor to Specify			
2.2.5	Enclosure for mounting of Panel PC and the Touch Panel on the control desk. This shall be designed and shape & size should be selected to match seamlessly with the existing control desk.	Vendor to Specify			
2.3	INTEGRATION OF DC DRIVE PANELS OF PUMP 1 & PUMP 2 TO THE PLC SYSTEM: 1 SET.. The 2 Nos DC Drive panel of Pump1 & Pump 2 which are being retained will have to be integrated in the PLC SCADA system of Control Desk. These panels have 1200 Amps, Siemens make DC Drive type 6RA70 and also S7200 PLC for control and interlocking. All the functionalities/features created for control and indication of Test-Bed 1 & 2 drives will have to be replicated. All the hardware required for establishing communication with these drives will have to be considered and quoted. The modifications as per our estimate that will be required for the purpose are as follows:	Vendor to confirm			
		Vendor to confirm			

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2.3.1	<p>PLC for Drive Panel of Pump1 & Pump2: 2 Nos.</p> <p>These are required to be supplied loose and shall be fitted in the drive panel (One each shall be accommodated in the drive panels of Pump1 & Pump 2). They will replace the S7200 PLC used in the panel for control logic requirements. This PLC should be suitable for communicating with SCADA PLC of control desk..</p> <p>They will be exactly of the same configuration and specifications as mentioned above at point 2.1.2 for drive panels for Test-Bed 1 & Test-Bed 2 (Compact unit having integrated Power Supply, CPU, communication port for data exchange with SCADA PLC, Programming port, 16 DI/16DO).</p>	Vendor to Specify			
2.3.2	<p>Communication Cards For Drive Panel of Pump1 & Pump2: 2 Nos.</p> <p>These are required for control of DC Drive from SCADA PLC of Control Desk over a industry standard bus. These cards are to be supplied together with the retrofit kit to enable mounting on the 1200 Amps, Siemens make DC Drive type 6RA70.</p>	Vendor to Specify			
2.4	FIELD PROGRAMMING STATION: 1 SET	Vendor to confirm			
	<p>A portable field programming station with pre-loaded licenced copy of following softwares shall also be supplied:</p> <p>i) Licenced copy of PLC programming software alongwith adapter/cable for program transfer to PLC.</p> <p>ii) Licenced copy of software tool for developing SCADA application.</p> <p>iii) Licenced copy of MIMIC display monitor programming software alongwith adapter/cable for program transfer to monitor.</p> <p>iv) Licenced copy of drive programming software alongwith adapter/cable for program transfer to drive.</p>	Vendor to Specify			

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2.4.1	<p>Specifications of Field Programming Station: It shall be a heavy duty portable unit suitable for field work . It shall be either SIMATIC FIELD PG M2 PREMIUM or its equivalent having following minimum configuration:</p> <p>i) Processor: 2,2 GHZ INTEL CORE 2 DUO (T7500).</p> <p>ii) Hard disk: 250GB SATA.</p> <p>iii) Display: 15" SXGA+ DISPLAY (1400 X 1050)</p> <p>iv) Ram: 1X2GB DDR2 RAM</p> <p>v) Connectivity:</p> <ul style="list-style-type: none"> - 4 x USB 2.0 interfaces on the back - 2 x PCI-slots equipped with special retainers - 2 x LAN 10/100/1000 Mbit/s interfaces(Gigabit-LAN) - 1x serial <p>vi) DVD±RW±R combo drive</p> <p>vii) Networking: MPI/PROFIBUS.</p>	Vendor to Specify			
3.0	SYSTEM ENGINEERING & MODIFIED SCHEME:				
3.1	After the placement of the order, the vendor will have to study the complete Hydro-lab test setup, understand existing relay based interlocking scheme and plant wiring. Based on this shall undertake the system engineering, develop and submit to BHEL for approval the following details:	Vendor to confirm			
3.2	Modified electrical schematic diagram of the test plant. This shall include OGA drawing of all the components to be mounted at various locations, PLC Input/Output schematic drawing (This shall include all external field I/O's also) , Network connection scheme, Drive panel schematics, Termination charts etc	Vendor to confirm			

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3.3	Customised application package of SCADA software as per BHEL requirements. Various user-friendly, menu driven graphical screens will have to be created for comprehensive monitoring & control of the test setup.	Vendor to confirm			
4.0	ELECTRICAL SYSTEM :				
4.1	415V + 10% / -10%, 50HZ +/-3%, 3 Phase AC (3 wire system with out neutral) power supply source will be provided by BHEL at a single point. All the transformers, power supplies required as per the system requirements will have to be considered and shall be provided by the vendor.	Vendor to confirm			
4.2	All the supplied PLC modules, Output isolation relays, Protection fuses, Power supplies, transformers, auxiliary contactors etc are to be accommodated in the existing control desk. For this purpose all the surplus components and wiring shall be first dismantled (Vendors are advised to examine the condition of wiring of control desk and documentation/ schematics available with BHEL to assess the work content involved). All the components shall be mounted on DIN Rail, wiring routed through cable trays and all outgoing wires terminated at the bottom on TB's. Complete material required for the purpose like cable trays, 0.25/0.5 Sq.mm wires, terminals blocks, ferules are to be supplied by the vendor.	Vendor to confirm			
4.3	Each section of the control desk should be provided with fluorescent lamps for sufficient illumination and one power receptacles of 220Volts, 5Amp AC.	Vendor to confirm			
4.4	Proper earthing of all components and auxiliaries is to be ensured.	Vendor to confirm			
5.0	DOCUMENTATION :	Vendor to confirm			
	The following documents are to be prepared and supplied.				
5.1	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.	Vendor to confirm			

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5.2	Detailed Maintenance manual which shall contain System Description, Block diagram, Schematic drawings, Ladder diagrams/Input-Output listings/Cross references of PLC, Application program of MMI/SCADA system, Trouble shooting charts etc.	Vendor to confirm			
5.3	One additional set of all the above documentation on CD ROM, wherever possible.	Vendor to confirm			
6.0	ERECTION & COMMISSIONING				
6.1	Vendor will have to take full responsibility for carrying out the erection of all components, their wiring, testing, start up, development of PLC/ SCADA/MMI application program, their proving etc. The work will broadly comprise of following: a) The supplied control panels of Test-Bed 1 & Test-bed 2 to be installed in place of the existing drive panel. Terminations of all cables as per requirements. b) Mounting of Digital Encoder in place of analog tacho on motor. c) Removal of all surplus & non-usable components, wiring etc of relay based interlocking at control desk d) Mounting of all supplied items, cable trays in the available space. e) Wiring of components, reconnection of outgoing cables etc as per the modified scheme. f) Mounting of enclosure of panel PC & MMI on control desk. g) Configuration of the SCADA application, Display screens, Alarm messages, trends charts etc. h) Application program development for PLC as per the requirement. i) Commissioning of the drive, PLC and complete system.	Vendor to confirm			
6.1	Vendor shall specify the shutdown time of the test plant required for completing the E&C	Vendor to Specify			

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7.0	GUARANTEE :				
7.1	The vendor will have to provide a warrenty of 12 months and services for 12 months from the date of acceptance of the machine.	Vendor to confirm			
8.0	INSPECTION:				
8.1	The complete material shall be supplied in one lot (part shipment will not be accepted). It shall be inspected at supplier's works prior to dispatch. The party shall inform the readiness of the material atleast one week in advance	Vendor to confirm			
9.0	TRAINING:				
9.1	The party after placement of order has to arrange indepth training of two BHEL Engineers on SCADA Software and DC Drive at OEM's authorised training centre	Vendor to confirm			
10.0	QUALIFYING CONDITIONS :				
10.1	Only those vendors, who have developed and commissioned at least one PLC based SCADA System having minimum 250 I/O and also AC/DC Drives of minimum 150KW rating either together in single projec or seperately for large test/process plant or machine tool in the past five years and such system is presently working satisfactorily for more than one year (more than six months if supplied to any unit of BHEL) after commissioning, would be eligible for participating in the tender. The following information is to be submitted by the vendor about the companies where similar machines have been supplied.	Vendor to confirm			
	1. Name of the customer / company where such system is installed.	Vendor to Specify			
	2. Complete postal address of the customer.	Vendor to Specify			
	3. Year of commissioning.	Vendor to Specify			

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	4. Application for which the system is supplied with details of application accuracies achieved on the job.	Vendor to Specify			
	5. Name and designation of the contact person of the customer.	Vendor to Specify			
	6. Phone, FAX no. and email address of the contact person of the customer.	Vendor to Specify			
	7. Performance certificate from the customers regarding satisfactory performance of machine supplied to them	Vendor to Specify			