

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)						
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				FORMAT NO.:CPRI/PUR/ETBID/GTP		
Section IV T -Technical Specification						
CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI						
Tender Enquiry No : CPRLR21HPL05C850						
Description of the Equipment/Goods/Services : Measuring and Recording system for 40,000A TEMPERATURE RISE TEST FACILITY AT HIGH POWER LABORATORY, CPRI, BENGALURU						
Note : 1) The technical bid submitted in other than this format is liable to be rejected.						
2) All blue fields are mandatorily to be filled in.						
Name and address of the bidder						
Quotation Number and Date						
Sl.No.	Parameters	CPRI Technical Specification / Requirements	Qty	To be completed by the Bidder		
				Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
1	Place where equipment /service to be supplied /provided	High Power Laboratory, CPRI, Bangalore.	1			
2	Scope	Supply, commissioning and training of Measuring & Recording system and thermocouples along with calibration certificate.				
3	General	Measuring and Recording system is used for Temperature, Volrage and Current measurement in presence of high current (up to 40 kA rms) and voltage (up to 270 Vrms 50/60Hz). Input channels shall be fed with isolated sensors (Temperature, Voltage and Current).				
		<ul style="list-style-type: none"> The supplier shall submit list of customers to whom the equipment (similar type) has been supplied in the past five years and also submit the PO copy/Performance certificate of similar equipment from the customers stating "working satisfactory". The supplier shall have registered after sales service center in India. 				
4	Service Condition	<ul style="list-style-type: none"> Temperature : 0°C to +45°C. Humidity: 95% RH (Non condensation). 				
5	Applicable Standards	The equipment shall comply the following standards: Electrical Safety IEC 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use General requirements IEC 61010-2-030 Particular requirements for testing and measuring circuits Electromagnetic Compatibility. IEC 61326-1 Electrical equipment for measurement, control and laboratory use EMC requirements - Part 1: General requirements				
6	Application of Temperature, Voltage and Current Measuring and Recording system	Application of Measuring and Recording system is used for Temperature, Voltage and Current continuous measurement in presence of high current (up to 40 kA rms) and voltage (up to 270 Vrms 50/60Hz)of busbars. The output of Thermocouples, Voltage Transformers (VTs) and Current Transformers (CTs) are connected to the Hardware of measuring and recording system.				

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SL.No.	Parameters	CPRI Technical Specification / Requirements	Qty	To be completed by the Bidder		
				Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
4	Service Condition	<ul style="list-style-type: none">• Temperature : 0°C to +45°C.• Humidity: 95% RH (Non condensation).				
5	Applicable Standards	The equipment shall comply the following standards: <u>Electrical Safety</u> IEC 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use <u>General requirements.</u> IEC 61010-2-030 Particular requirements for testing and measuring circuits <u>Electromagnetic Compatibility.</u> IEC 61326-1 Electrical equipment for measurement, control and laboratory use EMC requirements - Part 1: General requirements				
6	Application of Temperature, Voltage and Current Measuring and Recording system	Application of Measuring and Recording system is used for Temperature, Voltage and Current continuous measurement in presence of high current (up to 40 kA rms) and voltage (up to 270 Vrms 50/60Hz)of bushars. The output of Thermocouples, Voltage Transformers (VTs) and Current Transformers (CTs) are connected to the Hardware of measuring and recording system.				
7	Number of Input channels to Temperature, Voltage and Current Measuring and Recording system	Temperature :120 (TH isolated universal thermocouple) Voltage : 04 Current : 04 Temperature, Voltage and Current Measuring and Recording system is a modular system and provision shall be available in the Hardware for upgradation/addition of inputs for future requirements.				
8	Hardware requirements for Temperature measurement and recording system	1. Input channels :120 (TH isolated universal thermocouple) suitable for TC types: K, J, T, R, S, N, E, C, U, B. 2. Input connector : Mini Thermocouple connector (copper) 3. Sampling rate per channel : 100 Samples per Second 4. ADC type : 24 bit 5. Input Impedance : >100 MΩ 6. Isolation voltage : 1000 Vpeak channel to ground & 1000 Vpeak channel to channel 7. Resolution : < 0.001 deg. C 8. Accuracy : ±0.02% of reading ±0.5 °C ±10µV 9. Power Supply voltage : 6 to 50V DC				
9	Thermocouple requirements for Temperature measurement					
9 (a)	Thermocouple application	Measurement of busbar temperature in presence of high current (up to 40 kA) and voltage (up to 270 V).				
9 (b)	Type of thermocouple	T-type insulated thermocouples and its connection suits to data measuring and recording system input channel. Insulated Thermocouples shall be placed on surface of current carrying bus bar and suitable for measuring temperature at isolation voltage. Thermocouple shall able to measure temperature in air and oil.				
9 (c)	Thermocouple Isolation voltage	1000 Vpeak channel to ground & 1000 Vpeak channel to channel				

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9 (d)	Thermocouple Accuracy	±0.02% of reading ±0.5 °C			
9 (e)	Thermocouple temperature range	from -40 to 200 °C			
9 (f)	Number of thermocouples	120			
9 (g)	Length of Thermocouple	30 meters			
		60 no. of T - type thermocouple miniature male and female connectors shall be supplied by the supplier.			
10	Hardware requirements for Voltage measurement and recording system	Input signals : VT Output - range 0 to 110V rms 50/60Hz Number of channels : 04 Input connector : BNC Sampling rate : 20kS/s per channel ADC type : 24 bit Input impedance : > 1 MΩ Isolation voltage : 1000 Vpeak channel to ground & 1000 Vpeak channel to channel Resolution : 0.01 V Accuracy : ±0.05% Power Supply voltage : 6 to 50V DC Voltage Transformers (VT) are in the scope of CPRI.			
11	Hardware requirements for Current measurement and recording system	Input signals : CT Output - range 0 to 5A rms 50/60Hz Number of channels : 04 Input connector : BNC Sampling rate : 20kS/s per channel ADC type : 24 bit Input impedance : > 1 MΩ Isolation voltage : 1000 Vpeak channel to ground & 1000 Vpeak channel to channel Resolution : 0.01 A Accuracy ±0.05% Power Supply voltage : 6 to 50V DC Current Transformers (CT) are in the scope of CPRI.			
12	Functional part of Measuring and Recording System	The Measuring and Recording System mainly consist of: 1) a software interface for the operator, typically a windows (typically latest OS) based interface running on a Computer. By means of this interface the operator can able to set the parameters and triggers for measurements to be done in the test and exchange diagnostic information with the Data Recording hardware; dedicated software tools shall be available for data analysis and reporting. 2) insulated input channels for the measurement signals coming from transducers (i.e. thermocouples, Voltage and Current transformers) located in the field. 3) The measurement data which shall be stored in the computer automatically and later it can be playback also. The supplier shall supply Laptop of latest configuration to suits the requirements of Measuring and Recording System .			
13	PC interface	When thermocouple, voltage and current modules are connected to computer via standard Ethernet connection devices shall be automatically detected without a need to set up any IP address configuration.			
14	Data acquisition setting	*Before starting the test, the operator shall set all the parameters necessary to perform a correct acquisition of test quantities, storage. In working area menu there will be a dedicated pop up area where the operator can insert the main test parameters such as temperature, voltage, current, sampling rate, and so on. The software shall warn the operator in case of wrong input.			
15	Requirements of Hardware Software	1. Measurement of Temperature of all channels shall be simultaneously recorded and displayed. 2. Measurement of Voltage (RMS, Mean, Average) of all channels shall be simultaneously recorded and displayed. 3. Measurement of Current (RMS, Mean, Average) of all channels shall be simultaneously recorded and displayed. 4. Using Voltage and Current measurement, power (kW, kVAR) shall be calculated and displayed at low lagging PF to UPF. 5. Measurement of power factor shall be simultaneously recorded and displayed. 6. Measurement of harmonics upto 100th shall be simultaneously recorded and displayed. The above real time data shall be displayed in a presentable form (Numerical and Waveform) in GUI for entire duration of test and also measurement data shall be stored in the computer for entire duration of test.			

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16	Data Analysis Software Analysis	Software shall include at least the following features: * the operator can easily able to view the test data with dedicated help for the functionality; * Calculation of RMS values, Peak values, etc.; * Report generation format in MS word and PDF * Data export in MS Excel format (e.g. csv format) or equivalent; *Data export in Acrobat PDF format. The supplier shall supply Laptop of latest configuration to suits the requirements of Data measuring and recording system for Analysis, Data back up and report purpose.			
17	Calibration certificate	The measuring & recording sytem and thermocouples shall have calibration certificate traceable to National/International Standards from an NABL accredited lab or traceable to internationally accredited bodies like APLAC/ILAC etc.			
18	Calibration Facility	Supplier should have calibration facility in india for Calibration of supplied equipment. Supplier shall provide address details of calibration facilities in India.			
19	Installation & commissioning	Supply of equipment including Installation and Commissioning at High Power Laboratory, CPRI Bengaluru by demonstration.			
20	Scope of Power supply from CPRI	230V (±10%) , 50Hz (±3%), Single phase power supply shall be provided to the equipment.			
21	Training	Supplier shall provide the complete demonstration and training of the supplied product to CPRI officials for one day.			
22	Warranty	Warranty applicable as per CPRI Purchase terms and conditions. The supplier shall have registered after sales service centre in India. Service back up for 10 years.			
23	Proposed Model of Measuring and Recording system	The proposed model and its technical brocher of Measurement and Recording system for Temperature, Voltage and Current etc. shall be submitted by the supplier in the Bid.			
PN: 1) Mere statement of "Complied" do not suffice the requirement. The details of technical parameters in proof of CPRI requirements shall be furnished along with technical write-up, catalogues, brochures, literatures, phamplates, or any other documents shall be submitted in hard copy along with technical bid. 2) Calibration reports/certificates, factory test reports/certificates from an accredited agencies/facilities shall be submitted wherever applicable. 3) CPRI reserves the right to conduct "predispach inspection" prior to dispatch at the works of the supplier and the expenditure towards PDI shall be borne by CPRI. However information regarding the rediness of the equipment/machinery for the PDI shall be communicated in writing at lease 70 days in advance.					