

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

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Issue No : 2
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 Documents : PPM
 FORMAT NO.:CPRI/PUR/ETBID/GTP

Section IV T -Technical Specification

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Tender Enquiry No: CPRI/BLR22UHVRL79C1000

Description of the Equipment/Goods/Services : HVDC test system to perform DC artificial pollution testing.

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.	Technical Specifications/Parameters	Qty	To be completed by the Bidder		
			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
1	Application: To perform the DC Artificial Pollution test on Insulators (Porcelain, glass, polymeric etc) up to 800 kV level with feedback control system to meet the test source requirements as per the IEC TS 61245 standard	ONE SET			
2	Scope: Design,Supply, installation, commissioning and training of outdoor HVDC system at CPRI, UHVRL Hyderabad. This location already have a pollution test chamber of 27 meters height, 24 meters diameter with a wall bushing to accommodate rated DC voltage.				

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			Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
3	<p>Qualifying Requirements:</p> <p>1. Atleast one HVDC source of 500mA, 1000kV or with higher voltage and current rating should be supplied by the OEM.</p> <p>2. Performance certificate of HVDC system of rating 500mA, 1000kV or with higher voltage & current rating shall be provided which is in operation for last 5 years along with contact details of the user (Copy of purchase order, except price details, along with contact details including e-mail id (mandatory) of the concern person shall be enclosed).</p> <p>3. Performance certificate shall indicate year of manufacture of supplied HVDC test system</p>				
4	Rated Voltage : 1000 kV DC				
5	Voltage Polarity : Negative				
6	Rated current : 1 A Continuous				
7	Type : Outdoor				
8	Installation : Fixed				
9	Duty cycle : Continuous				

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10	Output Ripple Factor : $\leq 3\%$				
11	Peak – peak ripple voltage : $\leq 10\%$				
12	Short circuit current during flashover : $\geq 5\text{ A}$				
13	Max. Relative voltage drop during max. pulse current : $\leq 10\%$				
14	Average relative voltage drop during max. pulse current : $< 5\%$				
15	Relative overshoot in the test voltage due to sudden release of load caused by extinction of electrical discharge : $< 10\%$				
16	Feedback Controller: Suitable closed loop feedback controller to maintain the output voltage within 10% of test voltage on occurrence of scintillations during pollution testing.				

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17	Voltage Divider: Suitable Voltage Divider with measuring cables in compliance with IEC 60060-1 and IEC 60060-2 for measurement of test voltages.				

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18	<p>Real time Data Acquisition System (DAS): Real time measurement and DAS shall be designed to acquire the following test parameters simultaneously and further analysis of the data</p> <ol style="list-style-type: none"> 1. No. of chaneels - 4 Nos (Output test voltage/leakage current) 2. Magnitude, duration and time of occurrence of scintillating pulse current 3. Short circuit current during flashover 4. Ripple factor 5. Peak to Peak voltage Ripple 6. Voltage drop (max. and average) <p>Analysis:</p> <ol style="list-style-type: none"> i. Harmonics analysis in leakage current ii. Calculation of relative voltage drop and overshoot/undershoot iii. Time of occurrence the peak current etc. <p>Sampling frequency : 1 kHz – 100 kHz with selectable sampling frequency</p>				

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19	<p>Current shunt: Appropriate current shunts (4 nos.)with frequency response (≥ 1 MHz) suitable for measurement of continuous leakage currents and short circuit current along with suitable protection system in the event of failure of test sample.Two shunts to measure leakage current of 1 A continuously for at least three hours duration. The value shall be decided by supplier to suitably record the leakage current and flashover current with DAS. Two will be spare.</p>				
20	<p>Relevant Applicable standards: The test and measuring systems shall be compliance with IEC 60060-1, IEC 60060-2, IEC 61083-3, IEC TS 61245, IEC 60507 and IEC 62475 standards. (All standards shall be as per latest editions and year)</p>				

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21	<p>Control and Protection system: Suitable control and protection system for following aspects shall be incorporated 1. Automatic / semi-automatic grounding/discharge device 2. Breakdown detection/ protection resistors/protective circuit in the event of failure of test sample 3. Tripping of test system in the event of over voltage, over current (LV, HT level), test current set etc 4. Necessary protection indicators, troubleshooting instruction etc shall be provided. 5. Emergency stop, to switch off the entire HVDC system in case of an emergency</p>				
22	<p>Measuring cable: All measuring cables shall be provided with type of coaxial or other equivalent cable with length of 50 meters (minimum).</p>				

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23	Control cables: The necessary control cables at appropriate voltage and current level shall be provided and length of each cable will be decided based on the schematic layout of site.				
24	LT power supply available at Site: The incoming power supply available at site is mentioned below for design aspects of the system. 1. 11 kV 3- Φ / 2- Φ , 50 Hz @ desired KVA rating 2. 415 V, DYn11, 3 Φ / 2- Φ along with neutral accessible, 50 Hz 3. The capacity of power supply is 2500 kVA 4. 230 V, single phase, 50 Hz 5. The supplier shall provide necessary switchgear, intermediate transformers etc. required if, any.				

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25	<p>Operating conditions of Site: The operating / Ambient conditions of the site are mentioned as below 1. Ambient temperature: 5°C to 50 °C 2. Relative Humidity: 30 % to 95% RH 3. Average wind speed: 20 km/hr (average), 40 km/hr (max.) 4. Pollution severity: Medium 5. Seismic level: Zone II (0.2 g) 6. Altitude: 542 m from above sea level 7. Necessary foundation for test system, switchgear and control room shall be in CPRI scope as per layout/requirement.</p>				
26	<p>Calibration of measuring equipment: All type, Routine and performance test shall be performed on applicable measuring systems as per IEC 60060-1:2010, IEC 60060-2:2010 (Clause 6.2, Table - 1), IEC 61083-3 and IEC 62475 standards at any ILAC/NABL approved test laboratory [or] factory test reports . Calibration of current shunts including frequency response. These reports shall be produced to CPRI prior to pre despatch inspection.</p>				

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27	<p>Pre-dispatch Inspection:(PDI) During PDI, CPRI officials will witness the following checks /tests as per relevant standards. 1. Functional tests of all components 2. Safety and protection check 3. DC voltage flashover test using rod -rod gap arrangement at rated voltage level 4. DC Voltage withstand test at rated voltage for duration of 5 min. Note: 1. Pre despatch inspection shall be carried out at either supplier works or any testing laboratory, other than CPRI Laboratories. 2. The expenditure for witnessing PDI programme by two CPRI officials for the duration of five days shall be borne by CPRI</p>				
28	<p>Place of Delivery: Central Power Research Institute, Ultra High Voltage Research Laboratory, Hyderabad, Telangana, India - 500 098</p>				

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29	<p>Commissioning and Acceptance test: The total system shall be supplied, installed, commissioned at site and demonstrate the following commissioning tests</p> <p>a. Continuous DC rated voltage with basic load for duration of 8 hr without any malfunctions b. Demonstration of Artificial pollution test and acquisition of test parameters on test sample of 800 kV Insulator with salt deposit density (SDD) of 0.4 mg/cm². c. Demonstration of pollution test at rated voltage/maximum possible current on the sample provided by CPRI. d. Ripple factor and voltage drop as per this technical specification.</p>				

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30	<p>Documentation: The following documents in original triplicate and electronic formats shall be provided in ENGLISH only. Display and indicators of all measuring, control and DAS shall be in English only.</p> <ol style="list-style-type: none"> 1. All type, routine and performance test reports for all measuring equipment as per the IEC 60060-1, IEC 60060-2 and IEC 61083-3 standards 2. Operating and Instruction manual for the HVDC test system 3. Maintenance instruction manual 4. Troubleshooting documents 5. Electrical layout and schematic of complete test system 6. All indicators, troubleshooting instructions, nomenclature of component shall be in line with electrical schematic provided 7. Calibration/test certificate of current shunts used for DAS. 				

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31	Training: The Supplier shall provide two-days training to CPRI personnel on the following aspects of system at commissioning site a. Functional and safety aspects of the syste. b.Operation and Maintenance of the system with respect to manuals c. Hands on tarining on operaion of the system and d. Tips for troubleshooting and service related issues.				
32	Warranty: The complete test system shall be guranteed for minimum period of 12 months from the date of successful commissioning of the system at CPRI site.				

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/facilites shall be submitted wherever applicable.
 3) CPRI reserves the right to conduct "predispatch 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.