

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

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Section IV T -Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BHOPAL Web: www.cpri.in, www.tenderwizard.com/CPRI

Tender Enquiry No : STDS/12-01/2020-21/PUR/RTL-NK-14

Description of the Equipment/Goods/Services : 800kV, 80kJ Impulse Voltage test System.

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 of the Vendor						
Quotation Number and Date						
Sl.No.	Parameters	CPRI Specification / Requirements	Qty	To be completed by the Bidder		
				Details of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Specify deviations/ Remarks if any
1	Place where equipment/service to be supplied/ provided	Regional Test Laboratory (RTL), CPRI, Nasik				
2	Scope	The scope covers supply, Installation, commissioning and Testing of 800kV, 80kJ Impulse Voltage test system at Lightning Impulse Test lab, CPRI, Nasik. Reference Standards: 1. Impulse voltage test shall be in accordance with latest IS/IEC publications for the products as mentioned in Sl.No.3 Applications . 2. Test system shall meet the requirements of IEC 60060 Parts 1 & 2 (Latest Version). 3. Performance and accuracy of digital measuring system shall be in compliance with IEC 60060-2 (latest version) and IEC 61083-1(latest).	1			
3	Application	Impulse Voltage test system suitable for generation, measurement and analysis of lightning impulse voltage (LI & LIC) for Transformer Lightning Impulse Test lab at CPRI, Nasik for Distribution and Power transformers (5KVA to 10MVA, single & Three phase, Rated LV Voltage 110V to 3300V, Rated HV Voltage 3.6kV to 36kV) as per IS:1180, IS:2026-3 and IEC:60076 - 3 latest, on Distribution and Power Transformers, Instrument Transformers, Switchgears and other equipments upto 132 kV as per relevant standards.(IEC 60076-3, IEC-61869, IEC62271-100 and 200)				

4	Prequalification requirement	Similer test system of the same OEM offered in this bid shall have been supplied and shall be in sucesful operation in India at minimum two NABL accredited laboratories. Performance certificate of the same shall be submitted with the bid.				
5	Prebid meeting requirement	The bidder may write to Purchase Section, CPRI, Bhopal for clarification if required.				
6	Input Supply	Single phase 230V± 10%, 50± 2 Hz or Phase to Phase 415 V ± 10 %, 50± 2 Hz.				
7	Installation	Indoor				
8	Ambient temperature	5 °C up to 50 °C				
9	Altitude	986 m above MSL				
10	Relative humidity	10 to 95 % (non-condensing)				
11	Seismic zone	suitable for Zone 3				
12	Impulse Voltage Test System of rating 800 kV Peak, 80 kJ including the following:					
a	Make					
b	Model No.					
c	No.of stages	Eight				
d	Max. Charging voltage for Lightning Impulse	800kV				
e	Max.Energy at rated charging voltage for Lightning Impulse.	80kJ				
f	Suitable wave shaping resistors,inductors and capacitors for conducting Lightning Impulse voltage test on all the equipments as mentioned under Sl.No.3	The number of resistors,inductors,capacitors alongwith the values to be specified by the supplier according to the number of stages.				
g	Additional set of resistors for LI for testing all the above equipments including low inductive loads and high capacitive loads	The number of resistors and the value to be specified by the supplier.				
h	Charging and Control Unit	should be motorized with Isolation Transformer				
i	Charging rectifier	suitable for the specified rating of the impulse voltage generator				
j	Polarity reversal	Automatic				
k	Motor driven earthing device	Motorised				
l	Additional circuit to test low inductive loads	Glaninger Circuit or equivalent circuit				
13	800 kV R-C Impulse Voltage divider secondary arm	suitable for measuring voltage upto 800kV with response time as per standard IEC 60060-2(latest)				
13.1	Capacitance	to be specified by the supplier				
13.2	Damping Resistance	to be specified by the supplier				
13.3	Divider Ratio	800:1 (Preferably)				
13.4	Volatge measurement	should be free from corona				
13.5	Measuring Cable	The length of measuring cable shall be sufficient enough for actual test purpose, without altering the performance of the system.				
14	Set of non-inductive shunts of suitable rating, for current measurement, during testing of transformers.	0.1,0.5 & 1.0 ohms approx including measuring cables(25m length, 75 ohm).				

14.1	Measuring Cable	The length of measuring cable shall be sufficient enough for actual test purpose, without altering the performance of the system.				
14.2	Multiple chopping gap	1000kV including control cable length 10m Max.				
15	Computerized control and measurement	Suitable software for computer aided testing. Inter-connecting cables & necessary accessories.Measuring system shall have an EMI/EMC housing or case				
16	Digital Impulse Analyzer	Suitable for testing of Distribution and Power Transformers, Instrument Transformers, Switchgears and other equipments upto 132 kV as per relevant standards.(IEC 60076-3, IEC-61869, IEC62271-100 and 200). The impulse analyser shall have an in-built software for measurement of overshoot, transfer function analysis. The TDG(test data generator) shall be provided as per IEC61083-1(latest) for software validation.				
16.1	Standard requirements	Digital recorders shall meet the requirements of the testing standards (latest versions of) IEC 60060-1, IEC 60060-2, IEC 60076 IEC 61083-1, 2, etc.				
16.2	No.of Channels	Four				
16.3	Amplitude Resolution	minimum 10 bit or better vertical resolution for PDC				
16.4	Sampling Rate	minimum 100MS/s digitizing speed				
16.5	Accessories	Inter-connecting Cables & necessary accessories.				
16.6	Software	Necessary software for above analyzer along with software validation as per STL guidelines. Necessary software for conducting automated tests and automated sequencing.				
17	Calibration	The whole measurement system shall conform to IEC 60060-2(latest version) & IEC61083-1&2(latest version) with respect to its performance,documentation and accuracy. All calibration shall be done in a laboratory,which is accredited in accordance with ISO/IEC17025(latest) and with reference standards traceable to National/International standard.				
18	Demonstration	Supplier shall give complete demonstration of the instrument at the time of installation about the complete functionalities & usage of the instrument				
19	Performance Certificate	Performance certificate of quoted model not older than 3 years of the user to be submitted				
20	Pre-dispatch Inspection & Testing:	<p>Type Tests The supplier can submit reports of type and optional tests performed on similar equipment provided that a full demonstration is given that such similar equipment are fully representative of the supplied equipment. In absence of such report, the supplier has to perform the type and optional tests on the supplied equipment. The supplier shall inform CPRI of the Tests program 60 days in advance and shall allow CPRI representatives to witness them.</p> <p>Routine Tests All the routine tests shall be conducted in accordance with latest issue of relevant IEC Standards. a) IG Test system to be tested at full Load & at Full Voltage rating at the manufacturer works. b) Demo of LI waveforms at full voltage as per relevant IEC. c) Cost towards pre-dispatch inspection shall be borne by CPRI. The supplier shall inform CPRI of the Routine Tests program 60 days in advance and shall allow CPRI representatives to witness them.</p>				

21	Acceptance Test	<p>The Acceptance Tests at customer's site are aimed to demonstrate that the supplied equipment was correctly assembled, fulfils its technical specification and complies with the relevant standards. The Acceptance Tests shall also demonstrate the operation and the handling of the system and could be considered as a first training of customer's engineers. To this purpose, preliminary to carrying out the Acceptance Tests, the supplier shall perform a complete explanation of the system including: system specification and design, operation, control and safety functions.</p> <p>Moreover the supplier shall make available all the reports concerning the type and routine tests performed. Acceptance Tests shall be demonstrated by conducting the following tests;</p> <ul style="list-style-type: none"> • Full wave lightning impulse test (LI) • Chopped wave lightning impulse test (LIC) <p>All above tests shall be conducted on 10MVA test transformer or any other rating not greater than 10 MVA as offered by CPRI during commissioning tests. This depends on the availability of rating of the transformer under test.</p> <p>The Acceptance Tests shall be considered successfully carried out if the following items are verified:</p> <ul style="list-style-type: none"> • checking of the content of delivery for completeness (user manual, software for remote control, etc.) • checking of control functionalities 				
22	DOCUMENTS AND DRAWINGS	<p>Supplier shall also submit three sets of all relevant technical specifications , operating instructions and General drawings, electrical schemes, installation drawings and Circuit diagrams of all PCBs, Reports on inspection during manufacturing.</p> <p>Reports of routine and acceptance tests. All the documents shall be communicated in ENGLISH only. Documents are to be issued both on paper and soft copy.</p>				
23	Any Other	<p>supplier should provide Measuring Cable for voltage and current measurement along with the equipment and emergency stop switch on control panel.The length of measuring cable shall be sufficient enough for actual test purpose, without altering the performance of the system.The Supplier shall recommend the list of spare parts and maintenance equipment necessary for three (3) years of successful operation of the equipment.</p> <p>Spares (tentative)</p> <ol style="list-style-type: none"> a) Impulse (LI) front resistors b) Impulse (LI) tail resistors c) Impulse generator capacitors (charging capacitors) d) Additional Inductors e) Shorting links – Cross and straight links f) Cables to connect digitizer to peak voltmeter g) Earthing tape with spare rivets h) Mandatory spares if any required for 3 years of trouble free operation. 				

24	Installation, Commissioning & Training	The installation/Commissioning of equipments shall be carried out by supplier at CPRI, Nasik Premises. After successful commissioning at CPRI laboratory, training on operation and maintenance of the test system shall be given to CPRI officials by experienced professionals. (at least for 3 days without any additional cost)				
25	Warranty	The equipment shall have warranty for one year following the on-site start-up date. and The supplier has to give undertaking regarding post warranty technical support, service and supply of spare parts for successful operation of the equipment's for ten years.				
26	Delivery	All the equipments including necessary accessories should be delivered to CPRI within ten months from the date of placement of purchase order				
27	The following Items shall be quoted separately (Item-wise)	i) Spares (quantity shall be suggested by the bidder) a) Impulse (LI) front resistors b) Impulse (LI) tail resistors c) Impulse generator capacitors (charging capacitors) d) Additional Inductors e) Shorting links – Cross and straight links f) Cables to connect digitizer to peak voltmeter g) Earthing tape with spare rivets h) Mandatory spares if any required for 3 years of trouble free operation.				
		ii) Accessories: a) Necessary control and connecting cables. b) Suitable Inductors for testing transformers				
		iii) Training Additional Training on operation and maintenance of the test system to CPRI officials at CPRI, Nasik.				
		iv) Pre dispatch inspection at the manufacturer's works				
		v) Extended Warranty (To be quoted separately) (a) for one year (b) for two years				

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- PN: 1) Bidder shall indicate complete details/information how the CPRI GTP are complied with against each and every specification parameters & mere statement of 'complied' do not suffice the requirement.
- 2) A detailed technical/catalogue/literature/phamplet and any other technocal details shall be submitted in hard copy in a sealed cover superscribing enquiry number and due date so as to reach the below mentioned address within due date and time.
- 3) Firms having experience in manufacturing the above test system of the cited rating or higher only are eligible to quote.
- 4) Customers list for the same to be furnished along with the offer including date of supply, contact person, contact number, email ID, etc.
- 5) The quotation shall include detailed diagrams of each component, necessary circuit diagrams of the test system, floor area layout, necessary electrical clearance, etc.
- 6) Necessary Catalogues / Brochures to be enclosed. Reference to the Catalogues / Brochures in the offer shall clearly mention the Item Number, Clause, Table, Page Number, Figures etc., and appropriately highlighted in the Catalogues / Brochures.
- 7) The bidder shall specify the area of laboratory building with clear dimensional drawing to house the test source (High voltage system complete) along with test samples inside laboratory building with safety clearances. He is also required to submit the details of earthing/shielding network and type of earthing / shielding etc. to CPRI for the execution by CPRI