

PROCUREMENT PROCEDURE OF CPRI (NON WORKS)

Revision No. : 04
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 Section : Formats
 Topic : Technical Specifications format

Issue No : 2
 Issue Dt. : 30.06.2003
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 Documents : PPM
 FORMAT NO.:CPRI/PUR/ETBID/GTP

Section IV T - Technical Specification

CENTRAL POWER RESEARCH INSTITUTE, BENGALURU/BHOPAL Web: www.cpri.in

Tender Enquiry No : CPRI BLR22UHVRL75C991

Description of the Equipment/Goods/Services : Static Frequency Converter (SFC) for Losses and Induced over voltage test on Power Transformers

Note : 1) The technical bid submitted in other than this format is liable to be rejected.

2) All Green 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) Mention Complied/Not Complied	Deviations from GTP
1.0. PREQUALIFYING REQUIREMENTS FOR BIDDER					
1	The Bidder should have designed, supplied, tested, installed and commissioned at least one number of 100 kVA Static frequency converter with variable frequency from 40 Hz to 200 Hz to any laboratory during last ten years. The system shall be supplied from Original Equipment Manufacturer (OEM) and shall be in successful operation for five years. The bidder shall have to submit the documentary evidence such as performance certificate of the test system by indicating the ratings, model, type, serial number and successful operation of the system for more than five years.				
2.0. TECHNICAL SPECIFICATIONS					
2.1	SCOPE: Design, development, manufacturing, testing, supply, transportation, insurance, installation, commissioning and two days training to CPRI personnel on Static Frequency Converter (SFC)				
2.2	APPLICATION: The static frequency converter (SFC) shall be suitable to perform induced over voltage test along with Partial discharge (IVPD), no-load loss measurement, temperature rise test and load loss measurement on power & distribution transformers				
2.3	OPERATING CONDITIONS: Ambient temperature: 10 °C to 45 °C Mean altitude above sea level : 542 m Relative humidity : 45 % to 85 % RH				

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2.4	Input Power supply: Following power supply options are available, the supplier can choose according to their design / requirements. Three phase : 415 V, 50 Hz Single phase : 230 V, 50 Hz				
	Input specifications of SFC				
2.5	Number of Phases: Three phase with neutral accessibility				
2.6	Rated input voltage: 415 V ± 10 %				
2.7	Input voltage frequency: 50 Hz				
	Output specification of SFC				
2.8	Output voltage range (both in two phase and three phase) : 10 V to 400 V and regulation of output voltage of SFC with rate of change of voltage as specified in the IEC 60060-1 standard				
2.9	Output configuration : 3- phase with neutral accessibility				
2.10	Voltage accuracy : ±0.5 %				
2.11	Output power (in three phase operation) : 150 kVA				
2.12	Output power (in two phase operation) : 75 kVA				
2.13	Output voltage frequency range: 40 Hz to 200 Hz with frequency resolution of 0.1 Hz				
2.14	Output voltage ripple: < 1 %				
2.15	Overload capacity : 120 % of rated power for 1 min				
2.16	Maximum current rating during 3 phase operation: 217 A				
2.17	Maximum current rating during 2 phase operation: 188 A				
2.18	Power factor : better than 0.95 for both lag and lead conditions				
2.19	Duty cycle: Continuous operation				
2.20	Total Harmonic Distortion (THD) in output : < 3% at rated output and current				
2.21	Partial Discharge (PD) level of complete system shall be less than 3 pC through out its full range of operation				

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3.0	GENERAL PARAMETERS				
3.1	Cooling system of the SFC : suitable cooling system				
3.2	High voltage filter: The SFC shall be supplied with suitable filters to limit the electromagnetic noise generated from the SFC, in order to get PD level less than 3 pC.				
3.3	Protection system: The necessary protective devices such as three phase circuit breaker shall be installed at incoming side of the SFC in order to protect the system during the failure of test object. The protective device shall be operated based on the set current and voltage value in the control system of SFC.				
3.4	Control and Measuring System: The SFC shall be controlled from the PC based control system in order to regulate and monitor the following parameters a. Output voltage b. Output frequency c. Input and output current d. Power factor e. THD and ripple value f. Regulate the voltage and frequency based on the pre-selected values g. Automatic switching On/OFF of cooling system with continuous temperature monitoring of the SFC. h. Protection system based on the pre-set parameters All measuring equipment shall be provided with accuracy of 0.5 %				
	User interface: The PC based user interface shall be provided to control the SFC during testing and measurement sequence. The following features shall be provided to control the SFC . a. ON/OFF switch b. Pre selection of test voltage, frequency, test time, voltage regulation speed c. Pre-selection of test voltage and test current limit for tripping d. Voltage/frequency increase and decrease e. Start test f. Status of SFC indication g. Emergency stop				

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3.5	<p>Operational Tests The supplier shall submit reports for type and operational tests on SFC at any independent laboratories as per relevant standard of SFC.</p> <ol style="list-style-type: none"> 1. Insulation test 2. Light load and functional tests 3. Over current test 4. Temperature rise test 5. Power loss measurement 6. Measurement of Total Harmonic Distortion (THD) test 7. Measurement of Power factor 8. Measurement of ripple voltage and current 9. Calibration certificates shall be provided for all measuring equipment at any laboratory accredited as per ISO/IEC 17025 standard 				
3.7.0	<p>Pre-Dispatch Inspection: The supplier shall submit the type, operational test certificate of SFC and calibration reports of all measuring equipments for review before Pre Dispatch Inspection (PDI) to be carried out at the works of the supplier. Further, PDI shall be carried out by CPRI subject to the satisfactory compliance of all the test and calibration reports submitted in accordance with the relevant standards.</p> <p>The supplier shall have to conduct the following tests in the presence of CPRI representatives at the manufacturer's works/independent laboratory as a part of PDI:</p> <ol style="list-style-type: none"> a. Visual inspection of SFC b. Insulation test on SFC c. Checking the output voltage and frequency regulation d. Checking the safety functions e. Over current test f. Measurement of partial discharge level of SFC and demonstrate the partial discharge level less than 3 pC 				
3.7.1	The expenditure towards witness of the pre despatch inspection programme by two numbers of CPRI officials for duration of two days will be borne by CPRI				

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3.8	<p>Commissioning and Acceptance tests: The SFC shall be installed and commissioned to perform the no-load loss, induced over voltage test on power transformer. After completion of installation of SFC and other testing and measuring equipment, the following acceptance tests shall be performed with SFC as per procedure given in IEC 60076-3 and IEC 60076-1 standards</p> <p>a. No-load test on the SFC in three phase and single phase operation at maximum voltage</p> <p>b. Induced over voltage along with PD (IVPD) test and No-load loss measurement on transformer</p> <p>c. Temperature rise test and load loss measurement</p> <p>Note: The power transformer and other testing equipments will be arranged by CPRI to perform the above mentioned test.</p>				
3.9	<p>Demonstration and Training: The supplier shall provide two days training programme to CPRI officials at site for following aspects</p> <p>a. Demonstration of functional features of SFC</p> <p>b. Hands on training to CPRI officials on operation and safety aspects of the system</p> <p>c. Tips for the troubleshooting for repairs and service related issues</p> <p>d. Operations and preventive maintenance of the system</p>				
3.10	<p>Technical documents to be provided: The following information / documents shall be provided during supply.</p> <p>a. Dimensions [Length x width x height in mm]</p> <p>b. Mass [kg]</p> <p>c. All operational tests and calibration reports of the SFC</p> <p>d. General drawings, electrical schematics, installation drawings</p> <p>e. Operational manual and maintenance manuals in triplicate (include specific instruction relevant to handling, installation, trouble shooting and servicing)</p> <p>f. Report on pre despatch inspection and test reports</p> <p>g. Report on the commissioning and functional tests</p> <p>All the documents shall be provided in English Language Only</p>				

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3.11	Mandatory Spare Parts: The following mandatory spare parts shall be submitted. a. Fuses at incoming side of SFC - 02 sets b. Semiconductor modules - 01 set c. Heat sinks - 01 set d. Measuring transducers - 01 set The supplier may suggest optional spare parts required for SFC. However, these optional spare parts are not considered for evaluation during the bid.				
3.12	Warranty: The equipment shall be guaranteed for minimum period of 12 months from date of successful commissioning at 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 readiness of the equipment/machinery for the PDI shall be communicated in writing at least 70 days in advance.