Section IV T -Technical Specification

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

Tender Enquiry No : CPRIBLR21CDD01M746

Description of the Equipment/Goods/Services : OZONE RESISTANCE TEST APPARATUS AS PER IS 10810 (Part-13), IEC 60811-403, ASTM D 470, IS 3400 (Part-20) : 1994, ISO 1431-1/1994 & ASTM 4575

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		
			Detials of guaranteed technical parameters offered by the bidder	Guaranteed Technical Particulars (GTP)	Deviations from GTP
1	**Place where equipment to be supplied :** Cables Laboratory, Cables and Diagnostics Division, Central Power Research Institute, Bangalore				
2	**Scope (supply / supply & Installation / suply, installation & training) :** Supply, Installation and commissioning OZONE RESISTANCE TEST APPARATUS AS PER IS 10810 (Part-13) & IEC 60811-403. The system shall be commissioned at the laboratory of CPRI, Bangalore, by the Supplier. Necessary Logistics during commissioning and installation shall be arranged by the supplier.	1 No			
3	**GENERAL :** The Ozone Resistance test apparatus as per IS 10810 (Part-13), IEC 60811-403, ASTM D 470, IS 3400 (Part-20) : 1994, ISO 1431-1/1994 & ASTM 4575 is used to estimate the resistance of elastomeric material and polymeric materials of electric cables to ozone attack . The test apparatus shall consist of Test Chamber, Ozone Generator with High Voltage source & controller, Air Driers/Purifier, Flowmeter Control, Temperature Controlled Chamber, Glass Apparatus, Test Piece Carrier to detect by chemical method and Ozone Detector Unit.				
4	**TECHNICAL -- TEST CHAMBER :** 1) The test chamber shall be made of a material which has no reaction with ozone preferably stainless steel. 2) The test chamber volume shall be minimum 60 litres and it should be a refrigerated chamber having provision for both heating and cooling. The chamber dimensions shall be 450 mm X 450mm X 450 mm (LXBXH). 3) The temperature of the chamber should be controlled by a electronic digital temperature indicating controller using a PT-100 sensor. 4) The range of the temperature required is from 10°C to 80 °C with control accuracy better than ± 1°C 5) The internal chamber shall be accessiblr through a door having an adequate closing mechanism and seal to prevent loss of partial pressure or adversely affect the ozone concentration levels throughout the dutation of the test. 6) The door must have a provision or interlock mechanism to prevent the inadvertent opening during the intended duration of the test. 7) The access door shall be euipped with an observation window made up of tempered glass and shall be sealed to prevent loss of partial pressure or adversely affect the ozone concentration during the test. 8) The internal chamber may be equipped with a source of illumination and is intended for intermediate viewing of the specimens. 9) The internal chamber may be equipped with shelves or racks to place specimens and the material of the racks shall not react with ozone preferably stainless steel and the design of the racks shall be in susch a way that it minimizes the effect on the introduction, circulation, exchage or exhaust of the air-ozone mixture. 10) Provision for generating, measuring and controlling air-ozone stream concentration and partial pressure is required and the				

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5	**OZONE GENERATOR :** 1) The ozone generating source shall be located outside the test chamber and adequate filtration of foreign matter from the stream must be provided. 2) The Ozone generator shall have concetric electrodes, separated by a thin glass dielectric, between which voltage is applied. 3) This generator may be supplied by a High Voltage transformer with maximum voltage in the range of 20-30 kV with a current output of 8 mA and with a control for varying the voltage. Accuracy of High Voltage transformer should be ± 1%. 4) The Ozone generator assembly shall be mounted in a wooden box to ensure complete safety to the operator. 5) The ozone concentration shall be measured directly with an ozone meter or ozone analyzer/Ozone Detector Unit and the ozone concentration of the test chamber shall be 25 to 500 pphm (parts per hunder million) or ppb (Parts Per Billion) and the ozone meter shall have a different selectable ranges from 25 to 500 pphm/ppb, Resolution of Ozone Chamber shall be 1 pphm/ppb 6) Along with the Ozone Detector/Ozone Analyser, all the necessary accessories for chemical method shall also be supplied for validation				
6	**AIR SUPPLY :** 1) The source of air shall be from ambient or from a compressed air supply and adequate filtration or air driers for removal of moisture of air is required 2) Humidity Indicator which consists of reusable moisture indicating gel shall be provided. 3) The air with the required ozone concentration shall have a flowrate of between 280 l/h and 560 l/h and the air pressure shall be maintained slightly above atmospheric pressure. 4) Flowmeter with Control : It should provide a very fine regulation of air flow in the range of 2 to 20 liters/min				
7	**CIRCULATING FAN :** 1) To circulate the zir-ozone mixture, an electric fan capable of maintaining the constant velocity throughout the testing shall be provided. 2) The velocity shall not be less than 0.6 m/s as measured at 50 mm from the forward edge of the fan blades on the internal side of the chamber. 3) The fan motor shall not be located within the chamber. The fan motor shall have an extension shaft or drive mechanism that isolates the motor from the internal chamber. 4) The fan blades shall be recessed from the chamber and separated or enclosed by a protective mesh or grid-like cage				
8	**GLASS APPARATUS :** 1) To collect Ozone gas for determination of Ozone concentration by chemical analysis method.				
9	**TEST PIECE CARRIER :** 1) Mechanically rotating carrier of sufficient size should be mounted inside the chamber and upon which the clamps or frames for holding the test pieces should be mounted. 2) The test pieces should rotate at a speed between 20 mm/s to 25 mm/s in the horizontal plane normal to the gas flow in such a manner that the same position within the the chamber is visited by the same piece every 8 min to 12 min.				

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10	**EXHAUST SYSTEM** : 1) The test chamber should be equipped with suitable exhaust system and ozone destruction device susch as a catalytic unit. 2) The exhaust system must operate in such a way the air-ozone mixture from the test chamber must be exposed to a suitable ozone destruction device or catalytic unit so as not to introduce them to the ambient atmosphere and the maximum concentration in the exhaust system should be less than 2 %				
11	**Input Power Supply :** Operating Input Power supply of 220V +/- 10% AC, Frequency 50 Hz +/- 3%.				
12	**Environment :Operating conditions: Temperature, Humidity** • TEMPERATURE ---- Operation : Ambient to +40 °C ---- Relative humidity: Typical prevailing ambient humidity 30 to 85 % (non-condensing)				
13	**Essential Spares :** **The essential spares for trouble free opertation shall be quoted separately**				
14	**Calibration :** 1) The ozone meter/Ozone Analyser, flow meter, Velocity of the circulating fan, speed of the test piece carrier & temperature controller along with test chamber should be calibrated from NABL (ISO/IEC 17025) accredited laboratories				
15	**Manuals :** Relevant manuals/documents for operation and maintenance Two sets in English to be supplied (Hard copy) • Operation and maintenance • Drawings • Electrical / instrumentation • Technical / Service manuals along with circuit diagrams				
16	**Acceptance tests at CPRI laboratory:** 1) Training of the complete operation of the equipment and controls of the system as per CPRI specification. 2) Demonstration & validation of the function of Ozone Dertector unit by chemical method specified as per standard IS 10810 (Part-13) / IEC 60811-403 (Attached as Annexure) at the time of Istallation & commissioning				
17	**WARRANTY :** One year warranty from the date of installation & commissioning of the system				
18	**After Sales Service :** Service to be provided by local authorized agents for repair and maintenance in case of instrument breakdown or technical problems				

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, brouchers, 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 accreditated 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/machinary for the PDI shall be communicated in writing at lease 70 days in advance.