SPECIFICATION FOR 0-40 KV, 150 KVA AC HV TEST KIT

1.0 INTRODUCTION:

The utility of this will be for the testing of wound stators and rotors of hydro-generator/motors at various stages of manufacturing and/or erection at different applied voltages.

2.0 TECHNICAL DATA

2.1	Input supply	:	0-415 V± 10% volts, 50 ± 5% Hz, AC supply.
2.2	Output voltage	:	0 to 40 KV.
2.3	Capacity	:	3.75 A on HV side, 150 KVA in 0-40 KV range
2.4	Duty Cycle	:	50 %
2.5	Overall Accuracy	:	±1.5 % or better
2.6	Percentage Impedance	:	not more than 8% in any case.

3.0 FEATURES OF 0-40 KV, 150 KVA , AC HV TEST KIT

The equipment must be in two or three main units as described below :

3.1 **Control and Metering Panel** : It should consists of main input fuses, MCB, contactor fuses, supply indication lamps, push buttons, timers, tripping circuits, meters etc. housed in a robust cabinet with adequate ventilation and should have good aesthetic appearance. Digital meters of reputed make for indication as well as for measurement are preferred over analog. The cables/ wiring to be terminated on suitable terminal blocks with crimped lugs and ferrule nos. Gland plate should be provided at the bottom or rear side for cable entry. The instruments for indications and measurements include following :

Voltmeter : For primary voltage

Ammeter : For primary current

KV meter : For output voltage measurement

Ammeter : For leakage in milliamps and amps

Timer : For presetting hold time

3.2 High voltage transformer : Oil cooled step up transformer specially designed to cater HV breakdown applications.

3.2.1 **Core** : The core of the transformer will be of high grade CRGO steel of M4, M3 or M2 H grade material only.

3.2.2 **Coils** : The coils will be made of 99.99 % pure electrolytic copper conductor with suitable insulation between turns and layers. The primary and secondary coils will be of round shapes so as to withstand mechanical stress during short circuit and during normal operation.

3.2.3 **Wiring** : The wiring will be carried out with suitable cross section multi strand copper conductor. The cable should be terminated with ferrule and crimped lugs on both the ends. The bunch of wire be neatly laid out and secured to the body cabinetwith button tape.

3.2.4 HV point to be brought out with suitable porcelain insulator and should have isolated LV point brought out on the top of body to assist tan delta measurement with existing equipment.

3.3 Continuously variable auto transformer : Rated to operate on 0-415 V, 50 Hz. This unit should be oil cooled type fitted with all accessories and should have standard features.

3.4 Continuously Variable Reactor: 150KVAR rated to operate on 0-415 V, 50 Hz 1Phase Oil Cooled type. The Reactor should be design to compensate for Capacitive Current and should have minimum losses, so that Line Current drawn during testing is minimum.

4.0 CABLES

4.1 Primary cable

Primary cables should be 3 core and Minimum 20 Meters long suitable for connection to 415 ± 10% volts, 50 ± 5% Hz AC supply. 1100 V grade cable to be used.

5.0 Max. Dimension of unit (L x B x H) to be furnished with the offer.

6.0 Net weight with GA drawing to be furnished with the offer.

7.0 PAINTING:

HV test equipment shall be powder coated outside with epoxy paint light gray RAL-7035 and inside with white epoxy paint and all bright steel components shall be coated with rust preventive paint before dispatch.

8.0 TEST AND INSPECTION

- Supplier to submit his QA plan along with offer.
- Testing shall be done as per relevant standards. Inspection will be done at supplier's works by BHEL representative. Internal testing and QC reports along with one copy instruction manual shall be furnished for BHEL's approval before giving call for inspection.
- Supplier should have all the facility to conduct the following basic tests:-
  1. Percentage Impedance of H.V. Transformer.
  2. No Load and Full Load losses of H.V. Transformer.
  3. Over Voltage test of H.V. Transformer.
  4. No load and Full Load Test of Reactor.
  5. No Load and Load Test on Continuously Variable Auto Transformer.

The supplier should submit with offer, the testing scheme together with Line Diagram for all the test required on the above H.V. Tester.

9.0 INSTRUCTION MANUAL

The instructional manual shall consists of following sections. The instruction manual shall be made on good quality paper (at least 90 gsm) and shall be made in bound volumes (6 copies) suitable for long term usage in shop/site.

- Introduction.
- Photograph of all items of equipment
- Description of equipment, GA drawings, Schematic diagram/ Circuit diagrams.
- Test certificate.
- Detailed procedure to operate the equipment (written in easy language for understanding of operators)
- Dos and Donts, FAQ(Frequently asked Questions) and answers
- Trouble shooting flow chart.
- Service centre contact details like address, email address, phone nos, cell nos. etc.

10.0 GUARANTEE

- The equipment shall be guaranteed for reliable and trouble free operation for 24 months from commissioning or 48 months from supply whichever is earlier & to replace defective parts/ equipment/ materials free of cost within guarantee period.

11.0 DOCUMENTATION

- 1 set complete with drawings/leaflets/catalogue and technical information giving full description, operation, dimensions, weight etc. along with offer.

12.0 COMPLETENESS OF OFFER

Supplier to confirm compliance of specifications first instance itself. Any deviation shall be clearly brought out in the offer, without this the offer will not considered and will be rejected.