



SPECIFICATION FOR RECTIFIER DC POWER SUPPLY

1.0 INTRODUCTION:

The utility of this will be for the dryout of stator windings of hydro-generator/motors before measurement of IR value and HV test.

2.0 TECHNICAL DATA

- 2.1 Input supply : 0-415 V \pm 10% volts, 50 \pm 5% Hz, AC supply.
2.2 Output voltage : 0 to 50 V DC at 0-6000 A max.
2.3 Mode of operation : Continuous
2.4 Type : Continuously Variable with Auto Transformer.
2.5 Noise level : \leq 75 dB
2.6 Percentage Ripple : Less than 5%.

3.0 TRANSFORMER – RECTIFIER

- 3.1 Transformer : Oil immersed type
3.2 Cooling : Oil cooled
3.3 Type of rectifier : Diode Full Wave Bridge.
3.4 Transformer winding : 99.99 % pure electrolytic copper conductor
3.5 Voltage regulation : \pm 3 %

4.0 FEATURES

- 4.1 **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

Voltmeter : For output voltage measurement

Ammeter : For output current measurement

Timer : For presetting hold time

- 4.2 **Protection relays and alarms** : The relays and alarms are provided for

- Overload
- Over temperature.
- DC over voltage / over current
- Phase loss / phase reversal
- Earth fault

- 4.3 **Continuously variable auto transformer** : Rated to operate on 0-415 V, 50 Hz. This unit should be rated for 500A maximum and to operate continuously at 425A. It should be Oil Cooled type fitted with all accessories and should have standard features.

गोपनीय एवं अधिकार सुरक्षित
इस प्रपत्रा पर दी गई जानकारी भारत हेवी इलेक्ट्रिकल्स लिमिटेड की सम्पत्ति है इसे प्रत्यक्ष या अप्रत्यक्ष रूप से कम्पनी के हितों को नुकसान पहुँचाने के लिए कदापि उपयोग नहीं किया जावे

संशोधन : REV-01 DT. 17.8.2012
CLAUSE-3.1, 3.2 MODIFIED

हाइड्रोजनरेटर इंजीनियरिंग विभाग
भारत हेवी इलेक्ट्रिकल्स लिमिटेड

तैयारकर्ता

SD/-
P.K.VERMA

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- गोपनीय एवं अधिकार सुरक्षित
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5.0 CABLES

5.1 Primary cable

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

5.2 Secondary Cable

- Cable should be of flexible copper, 10 meter Long suitable for rated current.

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

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

8.0 PAINTING:

The 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.

9.0 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 Transformer.
 2. No Load and Full Load losses of Transformer.
 3. Over Voltage test of Transformer.
 4. No load and Full Load Test of Rectifier.
 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 Rectifier.

10.0 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.



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11.0 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.

12.0 DOCUMENTATION

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

13.0 COMPLETENESS OF OFFER

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

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