



AMENDMENT ON TECHNICAL SPECIFICATION FOR ELECTRICAL LABORATORY EQUIPMENTS FOR 3X660 MW NORTH KARANPURA.

SPECIFICATION NO.: PE-TS-405-556-E001

AMENDMENT NO # 1

REV. NO. 00

DATE: 16.05.2016

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The following modifications with respect to Technical Specification for **ELECTRICAL LABORATORY EQUIPMENTS** BHEL's Technical specification no PE-TS-405-556-E001 shall apply.

Bidder to note that existing clauses/details as appearing in the specification stands deleted and clauses/details as mentioned in "Modified to or Read as" column shall be applicable and complied by the bidder.

MODIFIED CLAUSES/PAGE NUMBERS.

Sl no.	Vol. No.	Section/ Description	Clause no	Page no	Existing clause/details	Modified to or Read as
1	IIB	SECTION-C/ (ANNEXURE-II SECTION C) of	S. No. 1 (For current transformers) Fully automatic Instrument transformer test set capable of measuring & printing ratio, polarity and knee point voltage by secondary injection method	Sheet 22 of 39 of technical specification	Fully automatic Instrument transformer test set capable of measuring & printing ratio, polarity and knee point voltage by secondary injection method 1No. Make: Vanguard,SCOPE,Omicron,ISA or reputed Indian/foreign make. It shall be suitable for Current transformers having secondary current rating of 1A & 5A	Fully automatic Instrument transformer test set capable of measuring & printing ratio, polarity and knee point voltage by secondary injection method 1No. Make: Vanguard, SCOPE, Omicron, ISA or reputed Indian/foreign make. <i>It shall be suitable for various protection and metering CTs present in the power plant with CT ratio upto 3500 / 1 A and 24000 / 5 A. Further, voltage for saturation test can be upto 6,000 V or more.</i>
2	IIB	SECTION-C/ (ANNEXURE-II SECTION C) of	S. No 4 (For motors) Motor bearing puller based on induction heating method	Sheet 23 of 39 of technical specification	Motor bearing puller based on induction heating method 1 No. Make: SKF,Simatool or reputed Indian/foreign make Highest rating HT (11kV) motor is of 12 MW pf 0.91 & efficiency 97.6% Highest rating LT (415 V) motor is of 200 KW pf 0.85 & efficiency 95%	Motor bearing puller based on induction heating method 1 No. Make: SKF,Simatool or reputed Indian/foreign make Highest rating HT (11kV) motor is of 12 MW pf 0.91 & efficiency 97.6% . Highest rating LT (415 V) motor is of 200 KW pf 0.85 & efficiency 95%.



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						Size of bearing: ID 50-300MM, OD MAX 450 MM.
3	IIB	SECTION-C/ (ANNEXURE-II SECTION C)	of	S. No 1 (For batteries) Fully automatic Battery impedance measurement test kit	Sheet 24 of 39 of technical specification	<p>Fully automatic Battery impedance measurement test kit 1 No. Make : Megger, Omicron, Mpower or reputed Indian/foreign make</p> <ul style="list-style-type: none"> capable of measuring and storing specific gravity of acid, temperature of cell etc. with data storage facility. Suitable to determine the condition of lead-acid batteries upto 2X1610 Ah and nickel- cadmium batteries up to 2X760 Ah.
4	IIB	SECTION-C/ (ANNEXURE-II SECTION C)	of	S. No 1(Electrical workshop equipments) Oven for drying of HT & LT motors insulation	Sheet 25 of 39 of technical specification	<p>Oven for drying of HT & LT motors insulation HT Oven (suitable for drying highest rating HT motor) 1 No. Make: Reputed Indian /foreign make Highest rating HT (11kV) motor- 12 MW, pf 0.91 & efficiency 97.6% LT Oven (suitable for drying highest rating LT</p> <p>Oven for drying of HT & LT motors insulation HT Oven (suitable for drying highest rating HT motor) 1 No. Make: Reputed Indian /foreign make Highest rating HT (11kV) motor- 12 MW, pf 0.91 & efficiency</p>



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					<p>motor) 1 No. Make: Reputed Indian /foreign make Highest rating LT motor- 200 kW, pf- 0.85, efficiency 95%</p>	<p>97.6% <i>Temperature Range- 200 °C (max.) continuously variable or variable in steps of 5 °C. Size of HT oven shall be suitable for highest rating HT motor (OGA attached in the technical specification) and ID fan motor(OGA attached with this amendment).</i> LT Oven (suitable for drying highest rating LT motor) 1 No. Make: Reputed Indian /foreign make Highest rating LT motor- 200 kW, pf- 0.85, efficiency 95% <i>Temperature Range- 180 °C (max.) continuously variable or variable in steps of 5 °C. Size of LT oven shall be suitable for highest rating LT motor (OGA attached in the technical specification)</i></p>	
5	IIB	SECTION-C/ (ANNEXURE-II SECTION C)	of	S. No 3 (Electrical workshop equipments) Hydraulic Bearing & coupling half pullers and hydraulic jacks	Sheet 26 of 39 of technical specification	<p>Hydraulic Bearing & coupling half pullers and hydraulic jacks 1 set Suitable for highest rating HT & LT motors Make: Reputed Indian /foreign make Highest rating HT (11kV) motor is of 12 MW pf 0.91 & efficiency 97.6%. Highest rating LT (415 V) motor is of 200 KW pf 0.85 & efficiency 95%.</p>	<p>Hydraulic Bearing & coupling half pullers and hydraulic jacks 1 set Make: Reputed Indian /foreign make Highest rating HT (11kV) motor is of 12 MW pf 0.91 & efficiency 97.6%. Highest rating LT (415 V) motor</p>



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						is of 200 KW pf 0.85 & efficiency 95%. <i>Hydraulic bearing & coupling half pullers should be suitable for Bearing size : ID 50-300MM, OD MAX 450 MM.</i> <i>Hydraulic jacks should be suitable for LT motors with weight upto 3,000 Kg and HT motors with weight upto 30,000 Kg.</i>
6	IIB	SECTION-C/ (ANNEXURE-II SECTION C)	of	S. No 5 (Electrical workshop equipments) Induction heating machine suitable for highest rating motor bearing/coupling half.	Sheet 26 of 39 of technical specification	Induction heating machine suitable for highest rating motor bearing/coupling half. 1 No. Make: Reputed Indian /foreign make Highest rating HT (11kV) motor is of 12 MW pf 0.91 & efficiency 97.6% Highest rating LT (415 V) motor is of 200 KW pf 0.85 & efficiency 95%.
7	IIB	SECTION-C/ (ANNEXURE-II SECTION C)	of	S. No 6 (Electrical workshop equipments) Electrical test bed for HT & LT drives	Sheet 26 & 27 of 39 of technical specification	Electrical test bed for HT & LT drives Make: Reputed Indian /foreign make It shall be used to test the repaired equipment during the O & M phase of the project. Separate HT and LT motor test bed shall be provided to facilitate carrying out the site test on repaired motors i.e. no load trials. It shall have 11 kV panel for HT test bed and 415 V LT supply
						Electrical test bed for HT & LT drives Make: Reputed Indian /foreign make It shall be used to test the repaired equipment (11kV, 3.3 kV, 415 V & 240 V motors) during the O & M phase of the



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				<p>panel to LT test bed. The slotted foundation bed (metallic) to accommodate HT/LT motors of various frame sizes shall be provided.</p> <p>Each of the test bed shall have separate Control panel for starting /stopping of drive & Associated cables & cabling.</p> <p>The no load trials on motors shall include but not be limited to following tests-</p> <ul style="list-style-type: none">• No load running of motor and reading of voltage, current, power, bearing temperature under steady state condition• Measurement of vibrations during no load run• Measurement of shaft voltage during no load run <p>Provision for Other site tests which are necessary to ensure the proper functioning of repaired motors shall also be provided in the test bed.</p> <p>Highest rating HT (11kV) motor is of 12 MW pf 0.91 & efficiency 97.6%.</p> <p>Highest rating LT (415 V) motor is of 200 KW pf 0.85 & efficiency 95%.</p>	<p>project.</p> <p>Separate HT and LT motor test bed shall be provided to facilitate carrying out the site test on repaired motors i.e. no load trials. It shall have 11 kV panel for HT test bed (<i>for 11 kV & 3.3 kV motors</i>) and 415 V LT supply panel to LT test bed (<i>for 415 V & 240 V motors</i>). The slotted foundation bed (metallic) to accommodate HT/LT motors of various frame sizes shall be provided. <i>OGA of highest rating HT & LT motor (attached with the technical specification) & ID fan motors (attached with this amendment) are being provided for reference.</i></p> <p>Each of the test bed shall have separate Control panel for starting /stopping of drive & Associated cables & cabling. The no load trials on motors shall include but not be limited to following tests-</p> <ul style="list-style-type: none">• No load running of motor and reading of voltage, current, power, bearing temperature under steady state condition
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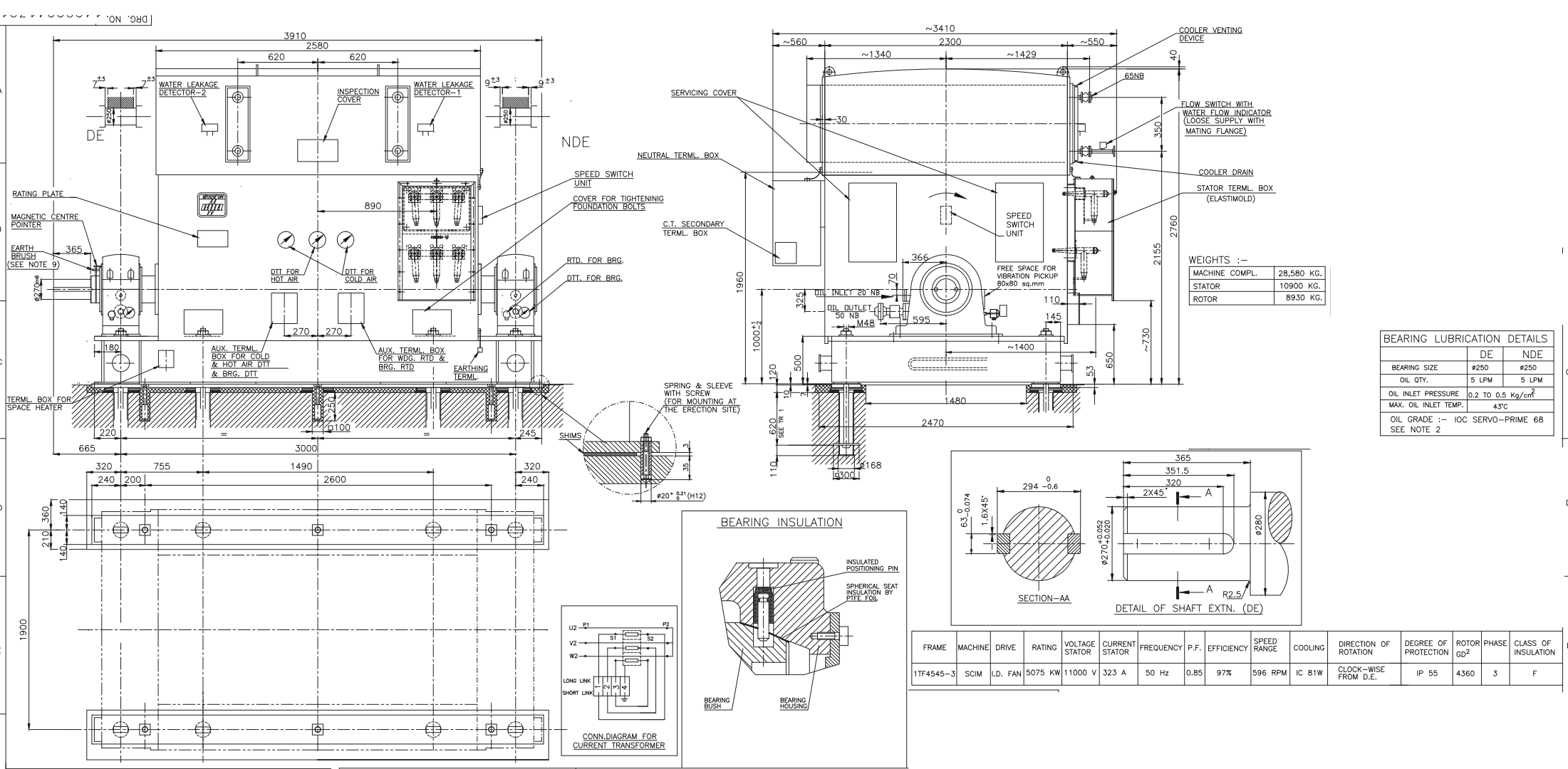
- Measurement of vibrations during no load run
- Measurement of shaft voltage during no load run

Provision for Other site tests which are necessary to ensure the proper functioning of repaired motors shall also be provided in the test bed.

BHEL shall provide 1 no. 415 V AC (3 phase 4 wire) power supply for LT test bed & 1 no. 11 kV 3 phase 3 wire power supply for HT test bed. Any other voltage level (ac/dc, fixed/variable) required for the test beds shall be derived by the bidder. Bidder shall make suitable arrangement for receiving the power and for cable termination at his equipment.

Highest rating HT (11kV) motor is of 12 MW pf 0.91 & efficiency 97.6%.

Highest rating LT (415 V) motor is of 200 KW pf 0.85 & efficiency 95%.



OGA OF ID FAN MOTOR