

Design, Engineering, Manufacturing, Supply, of 235/11.5 KV, 148 MVA, OFAF, Three
Phase, Spare Generator Transformer

VDE-0370, ASTM etc. The test set shall be suitable for test voltage range from 0-100kv and with built in printer to give the print out of the test results. The test set shall be fully programmable to carry out BDV test as per set standard and sequences without any manual intervention and provide printout of the result after completion of test. The test kit shall be of make – Megger, Tettex, Baur, Doble

12.1.2. N2 Dew point measurement kit

Test kit should be complete with all fixtures and should be suitable for measurement of dew point of Nitrogen both from the transformer tank and Nitrogen cylinders. The test kit shall be of make – Alpha moisture; U.K., Vaisala; Finland, Cryo Industries; USA, Dilo; Germany.

12.1.3. Oil tan delta and specific resistivity test kit.

The test kit shall be suitable for tan delta measurement, resistivity measurement of liquid insulation i.e. transformer oil without any external attachment. The test set should be complete with three terminal test cell for liquid insulation, confirming to VDE 0303 or equivalent, for measurement of Dielectric loss factor, capacitance and resistivity. The set up shall have arrangement for measurement of loss factor at 27 °C and 90 °C. Heating arrangement of test cell shall be inbuilt. The test kit shall be of make – Megger, Tettex, Baur, Doble

12.2. Mandatory Spares

12.2.1. The list of mandatory spares considered essential by the Employer is as indicated here in.

The bidder shall indicate the prices for each and every item (except for items not applicable to the bidder's design) in the 'Schedule of mandatory Spares' whether or not he considers it necessary for the Employer to have such spares. If the bidder fails to comply with the above or fails to quote the price of any spare item, the cost of such spares shall be deemed to be included in the contract price. The bidder shall furnish the population per unit of each item in the Section VII- (Forms & procedures). Whenever the quantity is mentioned in "sets" the bidder has to give the item details and prices of each item.

12.2.2. Whenever the quantity is indicated as a percentage, it shall mean percentage of total population of that item in the station (project), unless specified otherwise, and the fraction will be rounded off to the next higher whole number. Wherever the requirement has been specified, a 'set' it will include the total requirement of the item for a unit, module or the station or as specified. Where it is not specified, a 'set' would mean the requirement for the single equipment/system as the case may be. Also one set for the particular equipment. e.g. 'set' of bearings for a pump would include the total number of bearings in a pump. Also the 'set' would include all components required to replace the item; for example, a set of bearings shall include all hardware normally required while replacing the bearings.

12.2.3. The Employer reserves the right to buy any or all the mandatory spares parts.

12.2.4. The prices of mandatory spares & maintenance equipment indicated by the Bidder shall be used for bid evaluation purposes.

12.2.5. All mandatory spares & maintenance equipment shall be delivered at site preferably alongwith the main equipment or within erection schedule of the equipment. However, spares shall not be dispatched before dispatch of corresponding main equipment.

12.2.6. Wherever quantity is specified both as a percentage and a value, the Bidder has to supply the higher quantity until and unless specified otherwise.

12.3. Recommended Spares

12.3.1. In addition to the spare parts mentioned above, the contractor shall also provide a list of recommended spares for 3 years of normal operation of the plant and indicate the list and

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25. The gaskets shall not deteriorate during the life of transformer if not opened for maintenance at site. Supplier shall also recommend quality & make of gaskets to be used for replacement during maintenance if required. All joints flanged or welded associated with oil shall be such that no oil leakage or sweating occurs during the life of transformer. The quality of these joints is considered established, only if the joints do not exhibit any oil leakage or sweating for a continuous period of at least 3 months during the guarantee period. In case any sweating / leakage is observed, contractor shall rectify the same & establish for a further period of 3 months of the same. If it is not established during the guaranteed period, the guaranteed period shall be extended until the performance is established.

11.8.

INITIAL OPERATION

- 11.8.1. Continuously observe the transformer operation at no load for 24 hrs. w.r.t. Voltage, no load current, temperature rise and noise.
- 11.8.2. Gradually put the transformer on load, check and measure increase in temperature in relation to the load and check the operation with respect to temperature rise and noise level etc.
- 11.8.3. Infra red thermography shall be done after 12 hours of full load operation and results will be recorded for future reference

12. MANDATORY SPARES & MAINTENANCE EQUIPMENTS AND OTHER SPARES:

SL NO	MANDATORY SPARES & MAINTENANCE EQUIPMENTS	QUANTITY
1.	HV bushing with metal parts and gaskets	1No
2.	LV bushing with metal parts and gaskets	1No
3.	Neutral bushing with metal parts and gaskets	1No
4.	Set of tap changer contacts	1No
5.	Complete unit Cooler bank along with all accessories as per SOW. (only one unit bank)	1 set
6.	Set of gaskets (other than that with bushing).	1Set
7.	Complete set of valves used in the transformer	1 Set
8.	Aux Devices one each type i.e. MOG, OTI & WTI, Bucholz relay, PRV, SPR etc.	1 Set
9.	Conservator Bellow	1 No
10.	10% spares of the components of cooler control panel (minimum one item of each type)	1 Set
11.	Dew point measurement kit suitable for N2 dry out cycle of transformer	1No
12.	Oil BDV test kit(0-100KV)	1No
13.	Oil tan delta and specific resistivity test kit.	1No
14.	Supply of Extra transformer Oil	3 KL

Note : 1 set consists of quantities required for 1 complete transformer .

12.1.

Testing kits

12.1.1. Oil BDV test kit:

Test kit should be fully Automatic and portable, transformer oil breakdown Test Set for determination of Electrical Break down Strength of Insulating Transformer Oil as per IEC-156,