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National Test House



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INTRODUCTION



- **National Test House is a premier scientific institution of Govt. of India. Industries, institutions have been extensively using the unique infrastructure and expertise of N.T.H over the last 100 years.**
- **Established way back in 1912 in Kolkata by the then Railway board to cater to the need of Indian railways.**
- **It is the largest multi-location multidisciplinary testing laboratory in India.**
- **Transformer testing was started in 1993 with Haefley make equipments at NTH, Ghaziabad.**



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MAIN FUNCTIONS OF NTH



Testing & Evaluation: Materials & Products (Incl. on site):

- **Chemical**
- **Biological**
- **Civil Engineering**
- **Electrical Engineering**
- **Mechanical Engineering**
- **Non Destructive**
- **Rubber, Plastics, Paper & Textiles**

Calibration (Including on site):

- **Electro Technical measurements**
- **Thermal**
- **Mechanical measurements**



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FACILITIES AVAILABLE FOR TRANSFORMER TESTING AT GHAZIABAD



- **Complete Testing for Transformer, including Dry Type, upto 1000 kVA/33 kV, as per following standards at Laboratory**
 - **IS 1180 (PART-1) : 2014**
 - **IS 2026 (PART-1) : 2011**
 - **IS 11171 : 1985**
 - **IEEE C.57-12.00**
- **The Electrical Laboratory is accredited by NABL and BIS**



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TESTING ON TRANSFORMER



NTH offers following lab studies and measurements under Routine Testing

- **Measurement of winding resistance.**
- **Measurement of voltage ratio and check of phase displacement.**
- **Measurement of short-circuit impedance and load Loss.**
- **Measurement of no load loss and current.**



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TESTING ON TRANSFORMER



- **Measurement of Insulation resistance.**
- **Induced over voltage withstand test.**
- **Separate source voltage withstand test.**
- **Air and Vacuum Pressure Test.**
- **Oil leakage test**



SPECIAL TESTS



- **Determination of sound levels.**
- **No Load current at 112.5% voltage.**
- **Paint adhesion test.**
- **BDV and Moisture content of oil in the transformer.**



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TYPE TESTING ON TRANSFORMER



- **Lightning Impulse Test facility upto 1400 kV, 140 kJ for Transformers upto 100 MVA, 220kV as per following standards**
 - **IS 2026 Part -3 : 2009**
 - **IEC 60076 -3 : 2000**
 - **IEEE SA C.57-98 : 1993**



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TRANSFORMER TESTING AT GHAZIABAD



- **Temperature Rise Test as per following standards, upto 1 MVA rating transformers, as per**
 - **IS 2026 (PART-2) : 2010**
 - **IEC 60076-2 : 1993**
 - **IEEE Std C57.12.90:1993**



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ADDDITIONAL FACILITIES AVAILABLE FOR TRANSFORMER TESTING AT GHAZIABAD



- **BDV Oil Test as per following standards**

- **IS 335: 1993**
- **IEC 60156 : 1995**
- **ASTM D1816**



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FACILITIES INTENDED TO BE CREATED FOR TRANSFORMER TESTING at KOLKATA

- **Routine Tests**
- **Impulse Voltage Tests**
- **Short Circuit Tests**

as per

- **IS 1180 (Part-1) : 2014**
- **IS 2026 (Part-1) : 2011**



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FACILITIES INTENDED TO BE CREATED FOR TRANSFORMER TESTING at KOLKATA



- **The facilities for Routine Tests are planned for creation in F.Y. 2017-18.**
- **For Impulse Voltage Tests, the Laboratory building is already existent and it is planned to set up 1400 kV, 100 kJ Impulse Generator in F.Y. 2018-19.**
- **For Short Circuit Tests, Technical evaluation and cost analysis of the project has been taken up.**

1400 KV, 140 KJ, IMPULSE TEST SYSTEM (UNIT II) AT GHAZIABAD



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1000 KV, 100 KJ (Unit I) IMPULSE TEST SYSTEM at GHAZIABAD





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TRANSFORMER TESTING IN PROGRESS





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TEST EQUIPMENT AT A GLANCE



**3-Phase Transformer Test Bench,
75 kVA, 2000 V & 52 Amps**

**4 – Wire, 2 - Channel Winding
Resistance Meter, 0.2 m Ω - 2000 Ω ,
Accuracy 0.2 % FSD**





TEST EQUIPMENT AT A GLANCE



**3-Phase Booster Transformer,
75 kVA, 2000 V & 52 Amps**

**Transformer Turns Ratio Meter,
Ratio range 0.2 to 200 turns,
Accuracy 0.1 % FSD**





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Any Questions ?



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THANK YOU