

SARVAJANIK COLLEGE OF ENGINEERING
& TECHNOLOGY



INDUSTRIAL VISIT REPORT: VIKRANT TRANSFORMERS

B.E. 3RD YEAR ELECTRICAL SHIFT I

DEPARTMENT OF ELECTRICAL ENGINEERING

SCET, SURAT



Date:	2nd February, 2018
Time:	9:00 am to 3:00 pm
Coordinated by:	Prof. Sharad B. Patel Prof. Hemin D. Motiwala
Accompanied by:	Prof. Hemin D. Motiwala Prof. Siddhi V. Patel
No. of Students:	56

Introduction

This visit of **Vikrant Transformers, Maroli** was conducted by **Prof. Hemin D. Motiwala** for the students of Electrical 3rd year on **2nd Feb 2018**, with a motive to give practical knowledge about the design aspects of transformers.

Vikrant Transformers mainly manufactures distribution transformers till 33 KV for industrial use or special transformers according to the requirement of customers.

- Distribution transformers upto 2000 KVA, 33 KV Class
- Step up transformers upto 2000 KVA, 33 KV Class
- Earthing Transformers
- Low voltage transformers for industrial applications
- Special transformers to meet customer's specific requirements.
- Furnace duty transformers.

Transformers are designed and tested as per ISS 2026-1977. The transformers are designed by highly technical and experienced design engineer.

Components of Transformer



Conservator Tank:

It is used for holding excess amount of oil and provides space for the oil expansion and contraction of transformer oil during operation. Its size varies according to the rating of transformer.

Oil Level Indicator:

It indicates the level of oil present in conservator tank.

Breather:

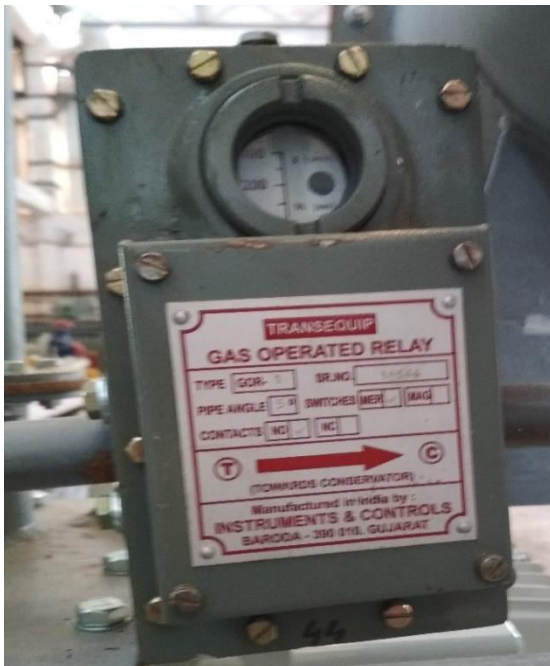
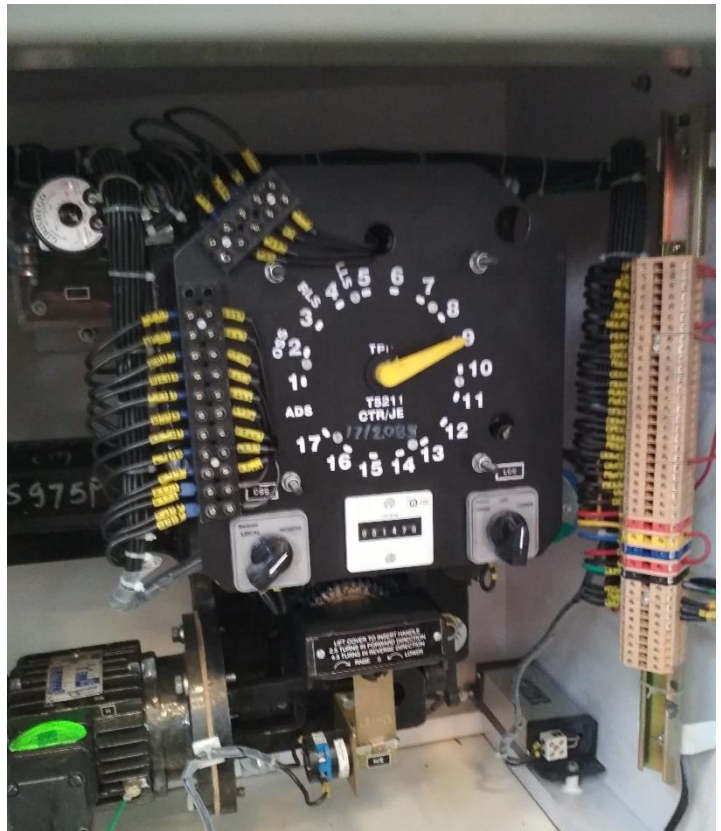
It is connected to the conservator tank of the transformer so the transformers can intake or exhale air from or to the atmosphere during the expansion and contraction of oil. As atmospheric air contains moisture, so such air can't be allowed directly to enter in the transformer breather is used. It contains silica gel which absorbs all the moisture from the atmospheric air and thus only dry air enters the transformer.

Off – Load Tap Changer:

It is connected to the transformer when continuity of supply is not important. As for changing the output voltage of the transformer the load has to be disconnected from the transformer.

On – Load Tap Changer:

It is use when the continuity of supply is necessary as transformer needs not to be disconnected from the load to vary its output.



Buchholz Relay:

It is a gas operated relay used for the protection of transformers from the faults occurring inside the transformer. Short circuit faults such as inter turn faults, incipient winding faults, and core faults may occur due to the impulse breakdown of the insulating oil or simply the transformer oil.

Explosion Vent:

It is a long pipe coming outside of the transformer tank. It is used to release the excess pressure build during fault so that bursting of transformer can be avoided.

Cooling Fins:

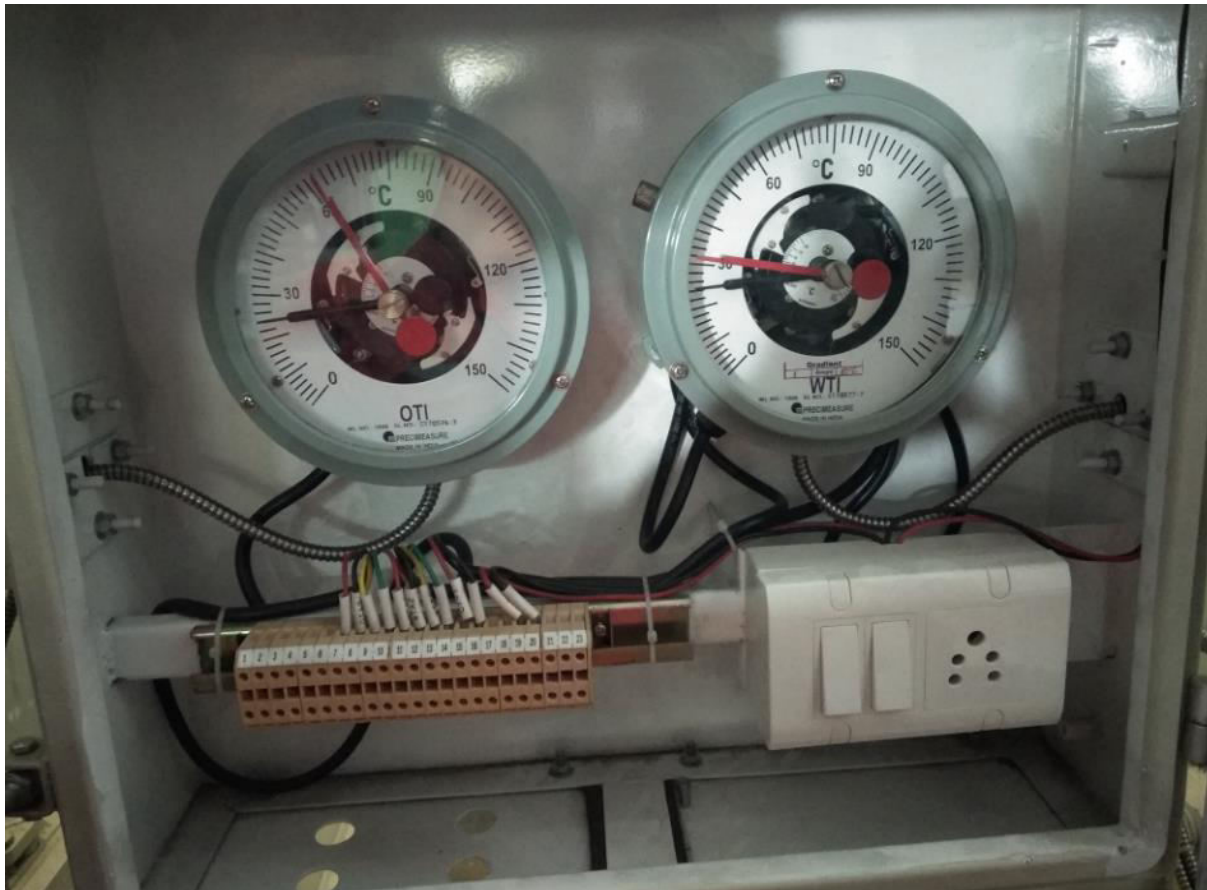
They are specially designed and attached to the transformer tank so that natural or forced cooling according to the rating of transformer can be provided and oil can circulate in that resulting in cooling of oil



Temperature Sensor

There are two important parts of transformer whose temperature need to be continuously observed for proper operation of transformer i.e. winding & oil

So, two meters are used for obtaining the temperature from these two parts; namely OTI (**Oil Temperature Indicator**) and WTI (**Winding Temperature Indicator**)



Each meter contains two pointers one with red colour and other with black colour. The black pointer shows the current temperature of respective part. While the red pointer shows the maximum temperature achieved by that part.

Each meter is connected electrically to a tripping or warning mechanism for according to the rating of machine so that necessary actions can be taken during fault.

Materials used

CRGO:

CRGO stands for the cold-rolled grain-oriented steel. It is used for the cores of power and distribution transformers due to its low loss characteristics. CRGO is usually supplied by the producing mills in coil form and has to be cut into "laminations", which are then used to form a transformer core, which is an integral part of any transformer.



CRGO steels are specially processed to develop a special grain orientation



within the steel.

Color Code on Transformer Body

Yellow Color – outlet available for holding the transformer

Red Color – indicates the movable components

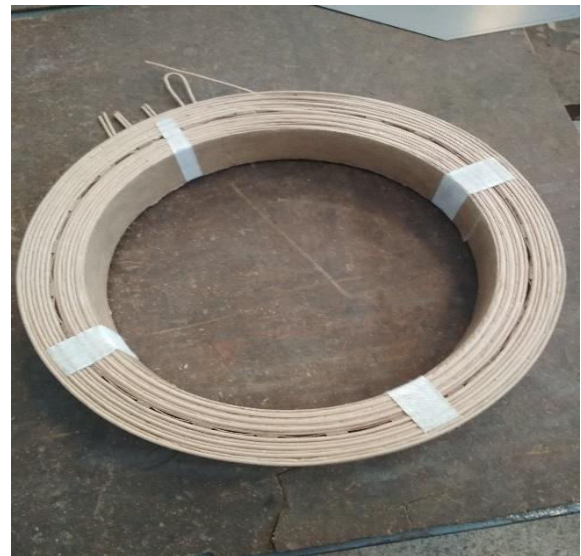
Blue Color – Connection for outlet valves



Winding Used in Transformer



Spiral Winding



Cross Over type winding



Continuous Disc type winding with tappings

Measurement Panel for Transformer



The above instrument shown is used to perform different test on transformer and its measured specifications are compared with the standard to be built.

Transformer Pics



Delta Connected Primary



Star Connected Secondary



Group Photo