

Protection of Transformer

There are different kinds of transformers such as two winding or three winding electrical power transformers, auto transformer, regulating transformers, earthing transformers, rectifier transformers etc. Different transformers demand different schemes of **transformer protection** depending upon their importance, winding connections, earthing methods and mode of operation etc.

It is common practice to provide Buchholz relay protection to all 0.5 MVA and above transformers. While for all small size distribution transformers, only high voltage fuses are used as main protective device. For all larger rated and important distribution transformers, over current protection along with restricted earth fault protection is applied. Differential protection should be provided in the transformers rated above 5 MVA.

Nature of Transformer Faults

A transformer generally suffers from following types of transformer fault-

- Over current due to overloads and external short circuits,
- Terminal faults,
- Winding faults,
- Incipient faults.

All the above mentioned transformer faults cause mechanical and thermal stresses inside the transformer winding and its connecting terminals. Thermal stresses lead to overheating which ultimately affect the insulation system of transformer. Deterioration of insulation leads to winding faults. Some time failure of transformer cooling system, leads to overheating of transformer. So the transformer protection schemes are very much required.