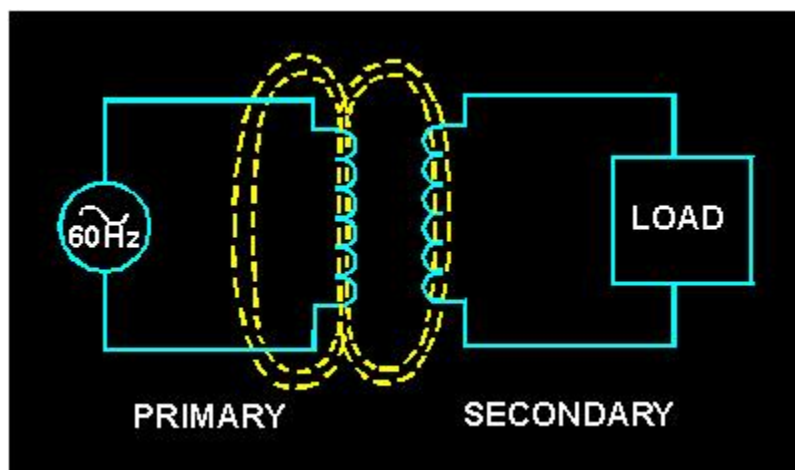


# INTRODUCTION TO TRANSFORMER

The transformer is an electrostatic device which is used to transfer electrical energy (voltage or current) from one circuit to another by mutual induction of two electric circuits without change in frequency, which is working under the principle of electromagnetic induction.

## PRINCIPLE OF OPERATION

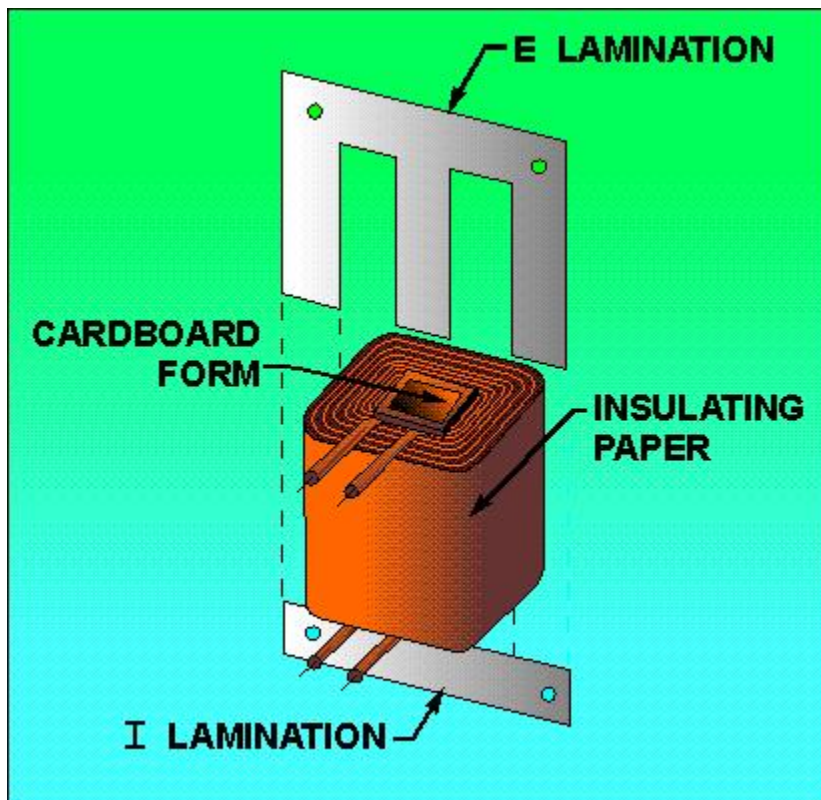
- The transformer is working under the principle of electromagnetic induction.
- By using this principle, which transfers electrical energy from one winding to another winding by mutual induction between the two windings.
- An alternating flux is established in the magnetic core when the primary winding is energized from an ac source ( $V_1$ ) and the secondary is open circuited.
- This flux links both the primary and secondary windings; thereby an emf is induced in them due to the rate of change of flux linkages with the windings



## CONSTRUCTION

The essential parts in a transformer are

1. A good magnetic core
2. Two windings
3. A time varying magnetic flux.



- The transformer core is made of sheet steel or silicon steel with high permeability and low hysteresis.

- The transformer core is used to provide a continuous magnetic path with small air gap.
- The sheets are laminated and coated with an oxide layer to reduce eddy current loss.
- Using a special grade of heat-treated grain-oriented silicon steel laminations can minimize the hysteresis loss.
- The thickness of lamination is 0.35mm for 50Hz of frequency and 0.5mm for 25Hz of frequency of operation.

## TYPES OF WINDINGS

The transformer is having two windings.

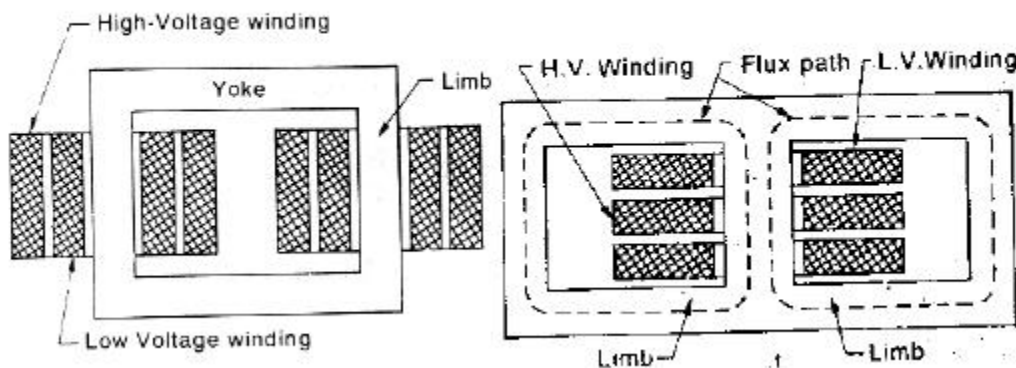
1. Primary windings
  2. Secondary windings.
- The winding, which receives electrical energy, is called the primary winding.
  - The winding, which delivers electrical energy, is known as secondary winding.
  - They are made of copper.
  - The windings are stationary and the magnetic flux is changing.
  - Hence the emf is induced on the secondary winding.
  - This kind of induced emf is called as statically induced emf.

## Types of transformer

- According to the transformer construction, they are classified into two types.

- (a) Core type transformer
- (b) Shell type transformer

- In the core type transformers, the windings surround the core whereas in shell type transformers, the core surrounds the windings.
- In both core and shell type transformers, the laminations are cut in the form of L, E and I shape to avoid high reluctance at the joints.



Source : <http://mediatoget.blogspot.in/2011/07/transformer.html>