

Distinguish, differentiate, compare and explain what is the difference between Induction Motor and Transformer. Comparison and Differences.

Difference between Induction Motor and Transformer

An induction motor is considered as a transformer with a rotating short-circuited secondary. The stator winding corresponds to transformer primary and the rotor winding corresponds to transformer secondary. However, there are differences:

1. The induction motor has an air gap, but the transformer has a core. Therefore, the magnetizing current in an induction motor is much larger than that of the transformer. For example, in induction motor is about 30-50 % of rated current whereas it is only 1-5% of rated current in a transformer.
2. In an induction motor, the stator and rotor winding are distributed around the periphery of the air gap rather than concentrated on a core as in a transformer (i.e., in the motor: leakage flux passes easily through the air gap) (i.e., in transformer: small amount of leakage flux passes away from the core). Therefore, the leakage reactances of stator and rotor winding quite large compared to that of a transformer.
3. In an induction motor, the input is electrical but output is mechanical. However, in a transformer, input as well as output are electrical.
4. Unlike the transformer, in the induction motor the rotor voltage, reactance and frequency are proportional to the slip s .