

Reduction of Iron Losses in a Transformer using Embedded Core

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Abstract

It is almost impossible to reduce the iron losses completely; however these can be reduced to a certain extent Here we have made an effort to reduce the eddy current loss by reducing the iron area of core It has been done by embedding an anti-ferromagnetic bar of copper in iron core by keeping total area constant As we know that eddy current loss occurs in ferromagnetic material instead of anti-ferromagnetic material so path length of eddy current will get reduced by inserting anti ferromagnetic bar in hollow part of ferromagnetic core As we know that eddy currents flow around the magnetic flux while enclosing it, the embedding of copper bar will reduce the path length of eddy current thus reducing the total eddy current loss.

Keywords: Transformer, separation of hysteresis and eddy current loss, embedded core, anti-ferromagnetic material.

1. Introduction

The transformer is one of the simplest of electrical devices Its basic design, materials, and principles have changed little over the last one hundred years, yet transformer designs and materials continue to be improved Transformers are essential in high voltage power transmission providing an economical means of transmitting power over large distances In electronic circuitry, new methods of circuit design have replaced some of the applications of transformers, but electronic technology has also developed