

Building factor of Grain-Oriented Silicon Iron (3% SiFe) with different thickness on 100kVA three phase distribution transformer core

Abstract

The power loss in laminated transformer cores is always greater than the nominal loss of the electrical steel laminations, by a factor known as the building factor. This paper discussed result of an investigation towards the effect of using two different Grain-Oriented Silicon Iron (3%SiFe) materials to the 100kVA three phase distribution transformer. The thicknesses of the material that have been used in this research are 0.23mm and 0.27mm. The transformer core will be assembled with 60° T-joint with 5mm mitred corner overlap length. Power loss has been measured using no-load test with 29 layer of lamination while nominal loss measured using Epstein test frame. At the operation mode flux density, 1.5T, the building factor of the transformer model core material with 0.23mm thickness is 1.219 while with the building factor for 0.27mm thickness is 1.250. This shows that thinner transformer core lamination is better than the other one by 2.5% during operation mode.