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2022 · 4th IEEE International Conference on Modern Electrical and Energy System, MEES 2022 · Kremenchuk · 20 October 2022 до 23
October 2022 · Код 186060

Тип документа

Публикация конференции

Тип источника

Материалы конференции

ISBN

979-835034683-1

DOI

10.1109/MEES58014.2022.10005760

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Comparison of Active Power Losses of Single-Phase Electromagnetic Static Devices by Radial Electromagnetic System

[Sadovoy, Oleksiy](#) ; [Vakhonina, Larisa](#); [Koshkin, Dmytro](#); [Martynenko, Volodymyr](#)[Сохранить всех в список авторов](#)^a Mykolayiv National Agrarian University, Department of Electric Engineering & Ee, Mykolaiv, Ukraine[Опции полного текста](#) [Экспорт](#) **Краткое описание****Ключевые слова автора**

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Краткое описание

A numerical calculation and comparative analysis of the single-phase transformers active power losses were carried out. The electromagnetic static devices compared have a radial structure of an electromagnetic system with a hexagonal and a tetrahedral rod cross-section. The features of the calculation of active power losses of transformers and reactors according to the optimization criterion of the minimum number of losses based on the objective function method with technical level indicators that include relative variables are shown. The influence of replacing rectangular shaping contours of rods and winding turns with hexagonal ones in variants of spatial radial twisted magnetic cores with a frequency of 400 Hz on active power losses is determined. An optimization comparison of the variants showed that the active power loss rate improves when the cross-section of the rods changes from rectangular to hexagonal at a frequency of 400 Hz. © 2022 IEEE.

Ключевые слова автора

active power losses; comparative analysis; magnetic core; multilayer; optimization; single-phase transformer; twisted

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