Review Form 3

Journal Name:	**Advances in Research**
Manuscript Number:	**Ms_AIR_127926**
Title of the Manuscript:	**OPTIMIZING DISTRIBUTION TRANSFORMER DESIGN FOR HARMONIC RESILIENCE: A TAGUCHI-FEM APPROACH**
Type of the Article	**Original Research Article**

General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
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PART 1: Comments

	Reviewer's comment	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	This manuscript addresses a critical challenge in the field of power systems: *the design optimization of distribution transformers for harmonic resilience*. By employing a hybrid Taguchi-FEM approach, the authors propose a structured methodology for enhancing transformer efficiency and reducing energy losses. This research is particularly relevant for regions with low-voltage distribution systems facing significant harmonic challenges, such as Nigeria. The integration of advanced optimization techniques and experimental validation adds value to both academic research and practical applications.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	The title accurately reflects the core focus of the manuscript. However, for greater clarity, consider revising it to: "Optimization of Distribution Transformer Design for Harmonic Resilience Using a Taguchi-FEM Approach."	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract effectively outlines the objectives, methods, and key findings. However, it could benefit from a brief mention of specific harmonic improvement metrics (e.g., Total Harmonic Distortion (THD) reduction percentages) to highlight the quantitative impact of the study. Suggested addition: Include THD reduction values (16.78% to 4.12% for baseline and optimized designs) in the abstract for better emphasis on the study's contribution.	
Is the manuscript scientifically, correct? Please write here.	The manuscript is scientifically sound and technically robust. The use of Taguchi DOE and FEM for design optimization is well-documented, and the experimental validation adds credibility. However, a more detailed explanation of SNR calculations and their implications for design decisions would enhance clarity.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references are generally sufficient and include a mix of recent and foundational works. However, some additional recent references on advanced transformer optimization methods, such as machine learning-based approaches, could enrich the literature review. Suggested reference: Add a citation to a study on AI-driven transformer optimization to broaden the comparative scope.	
Is the language/English quality of the article suitable for scholarly communications?	The language quality is generally acceptable for scholarly communication, but some sections, particularly in the methodology and discussion, are overly technical and repetitive. Simplifying these parts will enhance readability without losing technical rigor.	
Optional/General comments	The manuscript provides a novel contribution to transformer optimization. However, the authors should: • Expand the discussion on the broader implications of the optimized design for power system reliability. • Discuss the potential cost implications of implementing amorphous steel cores in real-world applications.	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

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