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.
To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

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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.	The manuscript addresses a critical gap in transformer design optimization by targeting harmonic resilience, a pressing issue in low-voltage distribution systems, particularly in developing nations like Nigeria. By employing a combined Taguchi-FEM approach, the study significantly reduces core losses and enhances transformer efficiency. The work demonstrates an innovative application of these methods and aligns with international standards, providing a valuable contribution to the fields of electrical engineering and sustainable power distribution. This approach has potential implications for improving grid reliability and operational costs globally.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	The title is suitable and accurately reflects the content and scope of the manuscript. However, a minor revision to explicitly highlight the focus on "harmonic resilience in low-voltage systems" could further clarify its scope for readers. Enhancing Harmonic Resilience in Low-Voltage Transformers: Optimization via 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 is comprehensive and provides a clear summary of the research objectives, methodology, results, and implications. It could, however, be improved by briefly mentioning the significance of harmonic mitigation for broader grid applications to emphasize its practical relevance	
Is the manuscript scientifically, correct? Please write here.	The manuscript is scientifically robust and technically sound. The combination of Taguchi Design of Experiments and Finite Element Analysis (FEA) is applied effectively, and the results are validated using standard tests (Open Circuit and Short Circuit). The findings are consistent with established principles and are supported by detailed calculations and visualizations (e.g., B-H curves, flux distribution). Provide clearer justification for selecting specific Taguchi levels, particularly the chosen flux density range. Include a discussion on potential limitations of the Taguchi-FEM approach when applied to higher transformer ratings or different network configurations.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references are sufficient and recent, with a good mix of foundational works and contemporary studies. However, the inclusion of more studies related to harmonic resilience in low-voltage systems, particularly in other developing regions, could strengthen the discussion. Consider adding references focusing on field testing of harmonic-resistant transformers	
Is the language/English quality of the article suitable for scholarly communications?	The manuscript's language is generally clear and suitable for scholarly communication. However, the technical narrative could benefit from minor refinements to improve readability, particularly in the methodological sections.	
Optional/General comments		

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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