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REVIEWER'S REPORT

Manuscript No.: IJAR- 58856

Title: "STUDY OF THE IMPACT OF HEAT EXCHANGE ON THE DYNAMIC RESPONSE OF A FIBER-PLASTER COMPOSITE UNDER TRANSIENT CONDITIONS"

Recommendation:
Accept

Rating	Excel.	Good	Fair	Poor
Originality	Yes			
Techn. Quality		Yes		
Clarity	Yes			
Significance		Yes		

Detailed Reviewer's Report

Reviewer's Comment for Publication.
Acceptance Comment are mentioned below suitable for the paper titled "STUDY OF THE IMPACT OF HEAT EXCHANGE ON THE DYNAMIC RESPONSE OF A FIBER-PLASTER COMPOSITE UNDER TRANSIENT CONDITIONS"

Reviewer Comments: Accept

Reviewer Comments –

Introduction
The manuscript presents a relevant study on the transient thermal behaviour of a fiber-plaster composite used as a thermal insulation material. The investigation focuses on temperature distribution, heat flux density, and heat transfer coefficients across a 5 cm thick wall under transient conditions. The topic is important for the development and assessment of sustainable building materials and energy-efficient thermal insulation systems. The manuscript addresses a meaningful engineering problem and provides a clear framework for examining heat transfer through the composite material. Overall, the study has sufficient technical relevance and practical significance to merit publication.

Literature Review
The manuscript is positioned within the broader field of transient heat transfer and thermal characterization of bio-based insulation materials. The consideration of fiber-plaster composite materials is particularly relevant because such materials can contribute to improved thermal performance and sustainable construction practices. The study focuses on key thermal parameters, including thermal conductivity, thermal diffusivity, temperature, and heat flux density, which are appropriate for evaluating transient thermal behaviour. The selected subject is consistent with established research directions in heat transfer through composite and insulating materials. The manuscript therefore demonstrates adequate relevance to the existing research area.

Solution Approach

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The study employs a Cartesian-coordinate representation of a simple wall composed of a fiber-plaster thermal insulation material with a thickness of 5 cm. The transient heat-transfer behaviour is investigated by determining temperature profiles and heat flux density as functions of both depth and time. The incorporation of heat transfer coefficients at the front and back faces provides an appropriate framework for characterizing the thermal exchange between the material and its surrounding environment. The defined thermal parameters and nomenclature are clearly related to the proposed analysis. The overall solution approach is technically appropriate for studying the dynamic thermal response of the composite.

Result and Discussion

The manuscript provides a meaningful investigation of the temperature and heat flux density variations within the fiber-plaster material under transient conditions. The determination of thermal profiles as functions of depth and time enables an effective assessment of heat propagation through the wall. The analysis of the heat transfer coefficient at the front face further contributes to understanding the interaction between the material and its thermal environment. The results are relevant to evaluating the insulation performance and dynamic thermal response of the composite. The findings have practical importance for applications involving thermal regulation and energy-efficient building envelopes.

Conclusion

The manuscript provides a relevant and technically meaningful study of the transient thermal response of a fiber-plaster composite wall. The investigation of temperature profiles, heat flux density, and heat transfer coefficients offers useful insight into heat exchange within the insulation material. The selected analytical framework is appropriate for examining the dynamic behaviour of the composite under transient conditions. The work has potential significance for sustainable construction and thermal insulation applications. Overall, the manuscript presents a coherent contribution to the field of transient heat transfer and composite insulation materials. Therefore, the manuscript is recommended for acceptance.