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REVIEWER'S REPORT

Manuscript No.: IJAR- 58759

Title: ThermomÃ©canical characterization of adobe bricks made from cattai "

Recommendation:
Accept

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

Reviewer Name: Dr. Ashish Yadav

Detailed Reviewer's Report

Reviewer's Comment for Publication.
Acceptance Comment are mentioned below suitable for the paper titled "ThermomÃ©canical characterization of adobe bricks made from cattai "

Reviewer Comments: Accept

Reviewer Comments –

1. Introduction
The manuscript investigates the thermomechanical performance of adobe bricks incorporating cattail as a natural and locally available material. The topic is highly relevant to sustainable construction and the development of environmentally friendly building materials. The study addresses the important challenge of improving thermal insulation while maintaining sufficient mechanical strength. The use of *Typha australis* offers an interesting approach for reducing the environmental impact of conventional construction materials. Overall, the introduction provides a clear and appropriate motivation for the research.

2. Literature Review
The manuscript is well situated within the field of earthen construction materials and natural-fiber-based composites. Previous research has demonstrated the potential of plant-based materials to modify the mechanical and thermal properties of adobe and other earthen materials. The selected parameters, including density, compressive strength, thermal conductivity, and thermal effusivity, are appropriate for evaluating material performance. The incorporation of cattail represents a relevant contribution to the development of bio-based construction materials. The literature background therefore provides sufficient support for the scientific relevance of the study.

3. Solution Approach

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The experimental approach is appropriate for evaluating the influence of cattail content on adobe brick performance. Specimens containing cattail proportions ranging from 0 to 2% were prepared and characterized through mechanical and thermal testing. Measurements of density, 28-day compressive strength, thermal conductivity, and thermal effusivity provide a comprehensive assessment of the developed materials. This methodology allows the authors to evaluate both structural suitability and thermal performance. The proposed approach is systematic and adequately addresses the objectives of the research.

4. Results and Discussions

The experimental results demonstrate promising thermomechanical characteristics for the investigated adobe bricks. The reported density varies from 1705.45 to 1878.85 kg/m^3, while compressive strength at 28 days ranges from 2.92 to 5.56 MPa. These strength values exceed the stated 2 MPa requirement for earthen masonry, confirming satisfactory mechanical performance. Thermal conductivity decreases from 0.769 to 0.371 W·m^{-1}·K^{-1}, indicating favorable insulation characteristics, while thermal effusivity ranges from 652.919 to 915.770 W·s$^{-1/2}$·m^{-1}·K^{-1}. Overall, the results support the potential of cattail-based adobe bricks for sustainable construction applications.

5. Conclusion

The manuscript presents a valuable study on the development and characterization of sustainable adobe bricks incorporating cattail. The results demonstrate that the proposed materials can achieve adequate compressive strength while providing favorable thermal properties compared with conventional bricks. The research has practical significance for improving energy efficiency and promoting the use of renewable, locally available materials in construction. The experimental findings are consistent with the stated objectives and provide a meaningful contribution to sustainable building-material research. I therefore recommend the manuscript for ACCEPTANCE.