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Journal of Materials and Engineering Structures

Editorial

Volume 13, Issue 3, September 2026

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1 Introduction

Journal of Materials and Engineering Structures continues to consolidate its position as an international journal dedicated to the dissemination of high-quality research in the fields of materials science, structural engineering, construction technologies and infrastructure performance. Thanks to its rigorous peer-review process and its commitment to scientific excellence, the journal continues to attract contributions covering both fundamental research and practical engineering challenges.

Strengthened by recent progress in international indexing and visibility, notably through its inclusion in major scientific databases, JMES pursues a strategy focused on publication quality, editorial efficiency, international collaboration and the promotion of high-impact engineering research.

2 Issue presentation

This issue (Volume 13, Issue 3) includes twelve original research papers covering a wide range of topics, including construction materials, pavement engineering, structural optimisation, structural health monitoring, machine learning applications, sustainable construction and the seismic assessment of traditional structures.

A brief overview of the contributions in this issue is presented below.

The first paper deals with the lack of use of the Polished Stone Value, which is overlooked in current Vietnamese standards. It proposes the introduction of a national technical standard for Vietnam in order to ensure sustainable skid resistance tailored to Vietnamese conditions, enhancing infrastructure safety and longevity.

The second article presents a review on the self-healing mechanisms and performance of Calcium Sulfo-Aluminate (CSA) Cement Based Concrete. Several studies were examined and compared to evaluate the viability of CSA for the development of sustainable and resilient infrastructure in future construction practices.

The third paper develops a non-linear predictive model for estimating the compressive strength of a modified self-compacting concrete. The aim is to predict the compressive strength of silica fume-modified SCC under different mix proportions and curing conditions.

The fourth paper examines the seismic response of a curved bridge isolated using conventional elastomeric rubber bearings and shape-memory alloy rubber bearings under different sets of ground motions, to evaluate their effectiveness in improving the seismic resilience of curved bridges.

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The fifth article explores the use of hollow-core beams in order to make structures more cost-effective. Experimental and analytical investigation are also conducted to compare its bending behaviour with solid beams.

The sixth paper focuses on the application of topological optimisation techniques to the field of naval architecture, with a view to optimising the design of a tanker bulkhead in terms of mass whilst maintaining structural integrity, in order to reduce structural mass while maintaining mechanical performance.

The seventh paper presents a structural health monitoring (SHM) study of long-span cable-stayed bridges such as the Can Tho cable-stayed bridge; the study presents a comparative evaluation of two anomaly detection algorithms applied to the measured data: Isolation Forest and One-Class SVM. This paper investigates the reliability and computational efficiency of a pre-processing approach for real-time structural health monitoring (SHM) of cable-stayed bridges based on the Global Navigation Satellite System–Real-Time Kinematic.

The eighth article examines the use of Thick-film Based Strain Sensors for Structural Health Monitoring Applications. The performance of these sensors was evaluated through a series of tests that provide valuable information on the suitability of this type of sensor for monitoring the condition of civil engineering structures.

The ninth paper investigates the influence of thermal effects such as solar radiation on bridge components, particularly bearing systems. The findings underline the importance of incorporating environmental loading conditions into structural design practice.

The tenth contribution presents a comparative study of artificial intelligence models for hydrological prediction, demonstrating the effectiveness of Support Vector Regression and Artificial Neural Networks. The study highlights the growing importance of AI in environmental and water engineering.

The eleventh article proposes an innovative wall system that combines cob and rigid plastic frame to develop a sustainable and cost-effective wall for affordable housing, making it more economical than traditional earth-building techniques and less expensive than traditional brickwork.

The twelfth and final paper investigates the typological characteristics and seismic assessment of traditional masonry structures, providing insights into structural vulnerability and preservation strategies. The research contributes to the important field of heritage engineering and seismic risk mitigation.

3 Conclusion

Beyond their individual contributions, these articles, taken as a whole, highlight advances in the field of modern engineering research, including the increasing integration of artificial intelligence and data science, the growing importance of sustainable materials, the development of smart monitoring technologies, and the need for resilient and sustainable infrastructure. This can be seen as a fitting follow-up to the previous special issue: Merging Materials Science and Engineering for a Resilient Environment [1].

The editors would like to express their sincere gratitude to all authors for the trust they place in JMES, to the reviewers for their valuable expertise and constructive feedback, and to the editorial team for their ongoing efforts to uphold the journal’s scientific standards.

JMES remains strongly committed to further enhancing its international scientific impact, improving the quality of publications, reducing processing times, and attracting high-quality submissions from the worldwide scientific community.

We hope that the research published in this issue will serve as valuable scientific references for researchers and engineers and stimulate further advances in the fields of materials and engineering structures.

REFERENCES

[1]- H. Hammoum, F. Asma, The Industry of Tomorrow: Merging Materials Science and Engineering for a Resilient Environment. J. Mater. Eng. Struct., Editorial, 13 (2026) 203–204.