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# EPI International Journal of Engineering

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# Foreword

We are pleased to announce the publication of the EPI International Journal of Engineering (EPI-IJE) Volume 6, Number 1, February 2023. In this edition, we continue to uphold the journal's commitment to delivering high-quality research in engineering and related disciplines. Each manuscript has undergone a rigorous review process to ensure the standards of academic excellence our readers have come to expect.

This edition features a total of seven (7) manuscripts, showcasing a broad range of topics that reflect the dynamic nature of engineering research. The first manuscript examines the effect of magnesium (Mg) on the erosion-corrosion resistance and bending strength of aluminum A383 alloy, providing critical insights into material enhancement. This is followed by a vibration analysis of free rectangular plates constrained by translational edge springs, presenting innovative approaches to structural dynamics.

The third manuscript explores increased hardness values achieved through the diffusion in a low-temperature carburizing process, highlighting advancements in metallurgical engineering. The subsequent manuscript investigates the impact of hot pressing on the mechanical properties of metal composites (Al/Sic) used in bushing manufacturing, emphasizing process variations and their outcomes.

The fifth manuscript delves into the Rayleigh-Ritz vibration analysis of beams, offering novel methods for structural analysis optimization. Following this, an analysis of the Pulau Balang Bridge operations and its effects on the Kariangau-Penajam ferry service sheds light on the interplay between infrastructure development and transportation systems. Finally, the last manuscript evaluates tug-barge operating costs for nickel ore transport, providing valuable insights into maritime logistics and cost-efficiency strategies.

We extend our deepest gratitude to all the authors who have contributed their excellent research to this issue. Our sincere appreciation also goes to the reviewers and editorial team, whose dedication ensures the continued success of EPI-IJE. We hope that the research presented in this edition will inspire further innovation and contribute positively to the advancement of science and technology.

Thank you for your continued support of EPI-IJE.

Warm regards,

**Dr. Faisal Mahmuddin**  
Editor-in-Chief of EPI-IJE

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