
Guest editorial: Contemporary issues and emerging design tools in aviation sectors

Dear readers,

It is my pleasure to present you with a special issue on contemporary issues and emerging design tools in aviation sectors in the *Journal of Aircraft Engineering and Aerospace Technology*.

The aviation industry is constantly driven by advancements in technology and innovation. This special issue, titled “Contemporary Issues and Emerging Design Tools in Aviation Sectors,” conveys a collection of research articles that address the current challenges and innovations in the aviation and aerospace sectors. The current special issue covers several aspects of study, including computational fluid dynamics (CFD), materials and advanced combustion systems. The articles cover a wide range of topics, showcasing the wide range of studies related to aviation research. One of the studies deals with advanced materials and composites. The study explores the potential of natural fiber composites reinforced with nanoparticles for lightweight aircraft applications. The study also highlights the optimized nanoparticle compositions in improving mechanical properties, which paves the way for lighter and more sustainable materials for aircraft components.

Simulation design tools and techniques, such as CFD, are also covered in this issue. Researchers used the high-performance computing in CFD to analyze the performance of critical aircraft components, such as helicopter rotor blades. In addition to above, the combustion study featuring the flame characteristics was also discussed. The study reveals

the combustion phenomenon of hydrogen fuel inside the fluid domain.

In addition to the above, alternative fuels are another prominent theme that was also discussed. The article investigates the use of microalgae biodiesel and hydrogen blends in microgas turbines and internal combustion engines. These studies provide policymakers with valuable information related to the economic and environmental benefits. The articles also demonstrate their potential to reduce pollutant emissions and improve engine performance, eventually contributing to a sustainable aviation transport industry.

Other notable contributions in this issue cover the application of time-series analysis for aeroengine gas trajectory prediction to experimental studies on cryocooler performance for space applications, which investigate the impact of temperature anomalies on aircraft performance, including future perspectives on diagnosis and prognosis. The study also offers valuable insights and lays the advanced groundwork for future research and development. The research presented in this special issue represents the tireless efforts of authors, reviewers, and editorial team members, whose dedication and expertise have made this collection of high-quality articles possible.

This special issue serves as a call to action for researchers, engineers and professionals in the field to build upon the knowledge shared within these pages. I extend my gratitude to all the authors for their high-quality manuscripts and to the reviewers for their valuable comments that helped improve the articles. I thank Professor Dr Philip Webb, the Editor-in-Chief, and the editorial staff of Aircraft Engineering and Aerospace for their continuous support during this special issue.

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