aerospace

MDPI

Editorial

Special Issue "9th EASN International Conference on Innovation in Aviation & Space"

Spiros Pantelakis [1,*] and Andreas Strohmayer [2,*]

[1] Department of Mechanical Engineering and Aeronautics, University of Patras, Panepistimioupolis Rion, 26500 Patras, Greece
[2] Department of Aircraft Design, Institute of Aircraft Design (IFB), University of Stuttgart, Pfaffenwaldring 31, 70569 Stuttgart, Germany
* Correspondence: pantelak@mech.upatras.gr (S.P.); strohmayer@ifb.uni-stuttgart.de (A.S.)

This Special Issue contains selected papers from works presented at the 9th EASN International Conference on Innovation in Aviation & Space, which was successfully held in Athens, Greece, between the 3rd and 6th of September 2019. The event included 9 keynote lectures and more than 360 technical presentations distributed in approximately 70 sessions. Furthermore, 40 HORIZON2020 projects disseminated their latest research results, as well as the future trends on the respective technological field. In total, more than 450 participants joined the 9th EASN International Conference.

In the present Special Issue, eight engaging articles are contained, with more than 1800 views each until now, related to aviation and space research. Slavik et al. [1] performed a multi-objective optimization in order to select a fixed propeller for a short take-off and landing (STOL) category aircraft. The aim was to achieve the highest possible performance with fixed propeller, i.e., high maximal horizontal and cruise speed, short take-off and high rate of climb; Pareto sets were implemented in order to select the optimal propeller. As a result, a high-performance power system with a low price (fixed pitch propeller) for STOL category aircraft could be designed. Plagianakos et al. [2] studied the effect of hot–wet storage aging on the mechanical response of a carbon fiber polyether ether ketone (PEEK)-matrix woven composite. A wide range of static loads and selected cyclic load tests on the interlaminar fatigue strength were performed, with the results providing a useful basis towards preliminary design with PEEK-based woven thermoplastic composites during service in aerospace applications. Capovilla et al. [3] designed a CFRP structural/battery array configuration in order to integrate the electrical power system with a spacecraft bus primary structure. The results indicated that, by implementing the designed configuration, more volume and mass was made available for the payload, compared with traditional, functionally separated structures employing aluminum alloys. The study of Khustochka et al. [4] proposed a novel method for a stable estimation of the engine performance parameters using a priori information about the engine, its mathematical model and expected performance, in view of fuzzy sets, and also about the measuring system and measuring procedure. A comparison of the proposed approach with traditional methods underlined its main advantage regarding its high stability of estimation in the parametric uncertainty conditions, while the proposed method can be implemented for matching thermodynamic models to experimental data, gas path analysis, as well as adapting dynamic models to the needs of the engine control system. In the work of Piscitelli et al. [5], a superhydrophobic coating for metallic substrates with a simplified and non-expensive method was developed, which could be employed as a usual paint able to prevent/reduce the formation of ice, especially on small aircraft. The surface properties and the wettability of the developed coating were investigated, with the authors concluding that the specific coating can be potentially employed as a passive anti-icing system for aeronautical applications. Kellerman et al. [6] investigated the potential of using existing

Citation: Pantelakis, S.; Strohmayer, A. Special Issue "9th EASN International Conference on Innovation in Aviation & Space". *Aerospace* **2021**, *8*, 110. https://doi.org/10.3390/aerospace8040110

Received: 12 April 2021
Accepted: 13 April 2021
Published: 14 April 2021

aircraft surfaces as heat sinks for the waste heat of a (hybrid-) electric drive train. The results pointed out that surface heat exchangers can provide cooling power in the same order of magnitude as the waste heat expected from (hybrid-) electric drive trains for all sizes of considered aircraft. Dvirnyk et al. [7] assessed the serviceability limit of the blades of the axial compressor of a helicopter engine operating in a dusty environment, and showed that the gradual loss of the stall margin over time determines the serviceability limits of compressor blades. The serviceability limits defined by the authors could enable helicopter users to significantly reduce operating costs by extending the remaining useful life (RUL) of the engines operated in a desert environment. Finally, in the study of Biser et al. [8], the possibilities of coupled, analytical models for sizing electric propulsion systems were demonstrated by considering the example of a propulsion system developed in the frame of a relevant EU-funded project. The approach proposed by the authors was found to favor model accuracy and low computational effort. Potential technical solutions to decrease the influence of the DC power transmission system were also given.

The editors of this Special Issue would like to thank the authors for their high-quality contributions and for making this Special Issue manageable. Additionally, the editors would like to thank Ms. Linghua Ding and the Aerospace editorial team.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Slavik, S.; Klesa, J.; Brabec, J. Propeller Selection by Means of Pareto-Optimal Sets Applied to Flight Performance. *Aerospace* **2020**, *7*, 21. [CrossRef]
2. Plagianakos, T.S.; Muñoz, K.; Saenz-Castillo, D.; Mendias, M.M.; Jiménez, M.; Prentzias, V. Effect of Hot-Wet Storage Aging on Mechanical Response of a Woven Thermoplastic Composite. *Aerospace* **2020**, *7*, 18. [CrossRef]
3. Capovilla, G.; Cestino, E.; Reyneri, L.M.; Romeo, G. Modular Multifunctional Composite Structure for CubeSat Applications: Preliminary Design and Structural Analysis. *Aerospace* **2020**, *7*, 17. [CrossRef]
4. Khustochka, O.; Yepifanov, S.; Zelenskyi, R.; Przysowa, R. Estimation of Performance Parameters of Turbine Engine Components Using Experimental Data in Parametric Uncertainty Conditions. *Aerospace* **2020**, *7*, 6. [CrossRef]
5. Piscitelli, F.; Chiariello, A.; Dabkowski, D.; Corraro, G.; Marra, F.; Di Palma, L. Superhydrophobic Coatings as Anti-Icing Systems for Small Aircraft. *Aerospace* **2020**, *7*, 2. [CrossRef]
6. Kellermann, H.; Habermann, A.L.; Hornung, M. Assessment of Aircraft Surface Heat Exchanger Potential. *Aerospace* **2020**, *7*, 1. [CrossRef]
7. Dvirnyk, Y.; Pavlenko, D.; Przysowa, R. Determination of Serviceability Limits of a Turboshaft Engine by the Criterion of Blade Natural Frequency and Stall Margin. *Aerospace* **2019**, *6*, 132. [CrossRef]
8. Biser, S.; Wortmann, G.; Ruppert, S.; Filipenko, M.; Noe, M.; Boll, M. Predesign Considerations for the DC Link Voltage Level of the CENTRELINE Fuselage Fan Drive Unit. *Aerospace* **2019**, *6*, 126. [CrossRef]