World Academy of Science, Engineering and Technology
International Journal of Aerospace and Mechanical Engineering
Vol:18, No:03, 2024

Rapid Design Approach for Electric Long-Range Drones

Authors : Adrian Sauer, Lorenz Einberger, Florian Hilpert

Abstract : The advancements and technical innovations in the field of electric unmanned aviation over the past years opened the third dimension in areas like surveillance, logistics, and mobility for a wide range of private and commercial users. Researchers and companies are faced with the task of integrating their technology into airborne platforms. Especially start-ups and researchers require unmanned aerial vehicles (UAV), which can be quickly developed for specific use cases without spending significant time and money. This paper shows a design approach for the rapid development of a lightweight automatic separate-lift-thrust (SLT) electric vertical take-off and landing (eVTOL) UAV prototype, which is able to fulfill basic transportation as well as surveillance missions. The design approach does not require expensive or time-consuming design loop software. Thereby developers can easily understand, adapt, and adjust the presented method for their own project. The approach is mainly focused on crucial design aspects such as aerofoil, tuning, and powertrain.

Keywords : aerofoil, drones, rapid prototyping, powertrain
Conference Title : ICAAE 2024 : International Conference on Aerospace and Aviation Engineering
Conference Location : Tokyo, Japan
Conference Dates : March 18-19, 2024