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Design of a Surveillance Drone with Computer Aided Durability

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Abstract : This research paper presents the design of a surveillance drone with computer-aided durability and model analyses that provides a cost-effective and efficient solution for various applications. The quadcopter's design is based on a lightweight and strong structure made of materials such as aluminum and titanium, which provide a durable structure for the quadcopter. The structure of this product and the computer-aided durability system are both designed to ensure frequent repairs or replacements, which will save time and money in the long run. Moreover, the study discusses the drone's ability to track, investigate, and deliver objects more quickly than traditional methods, makes it a highly efficient and cost-effective technology. In this paper, a comprehensive analysis of the quadcopter's operation dynamics and limitations is presented. In both simulation and experimental data, the computer-aided durability system and the drone's design demonstrate their effectiveness, highlighting the potential for a variety of applications, such as search and rescue missions, infrastructure monitoring, and agricultural operations. Also, the findings provide insights into possible areas for improvement in the design and operation of the drone. Ultimately, this paper presents a reliable and cost-effective solution for surveillance applications by designing a drone with computer-aided durability and modeling. With its potential to save time and money, increase reliability, and enhance safety, it is a promising technology for the future of surveillance drones. operation dynamic equations have been evaluated successfully for different flight conditions of a quadcopter. Also, CAE modeling techniques have been applied for the modal risk assessment at operating conditions.Stress analysis have been performed under the loadings of the worst-case combined motion flight conditions.

Keywords : drone, material, solidwork, hypermesh
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