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# Design of AED Based Drone to Deliver the Medical Kit on an Emergency Basis

Publisher: IEEE

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P. Nagarani ; Mohd Wazih Ahmad ; R Shalini ; Pavitar Parkash Singh All Authors



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### Abstract



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#### Abstract:

Access to reliable modes of transportation is essential. Postal delivery to multi-million-dollar freight transports, practically everything is linked to its connections. Wheeled motor vehicles and manned aeroplanes are now the only options for transporting medical supplies at times of urgent need, which may be expensive, time-consuming, and often impossible if the emergency site is far. Drones are a game-changer in the medical industry because they can transfer vital supplies like blood and medical equipment. Unfortunately, given the state of the art, the drone's battery life is a constraint that may slow down the delivery process. This article details the research into the mechanisms designed for drones to increase their battery life and efficiently deliver first aid supplies. The drone's system safely delivers and drops medical supplies, reducing the drone's takeoffs and landings. The primary goal of this research is to develop a device that can safely transport medical equipment to its destination and then carefully unload it there. Results showed the system could safely transport and deploy first aid supplies during flight and landing.

**Published in:** 2023 3rd International Conference on Advancement in Electronics & Communication Engineering (AECE)

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Date of Conference: 23-24 November 2023

DOI: 10.1109/AECE59614.2023.10428514



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**I. Introduction**

Responding quickly to medical emergencies can save lives. However, wheeled automobiles and manned aeroplanes are the only ways to carry medical equipment under challenging situations, which may be expensive, delayed, or impossible if the emergency location is far away. Also, ambulances may only get there in time if they get on time in traffic, which is common in large cities[1]. Before emergency medical services can get to a serious accident or other medical emergency scene, drones are used as a novel option to provide rapid aid to victims[2]. The quicker the medical professionals can respond to an emergency, the less damage they may do and more lives can be saved[3]. Unmanned aerial vehicles(UAVs) can be operated from a distance or autonomously are generally called drones. Among the life-saving medical supplies and equipment that drones can currently deliver the first aid kits, online medical care or medical support like diagnostics[4], drugs[5], or instruments[6], bloodstream[6], [7], life-saving medications[8], immunizations or anti-venom, cardiac arrest devices for patients in cardiac arrest, prescriptions, and even organs for transplantation. Drones can also efficiently transport vital medical supplies to far-flung hospitals, disaster zones, and ships at sea[9]. Drones may help transport medical supplies when traditional methods, such as the size or fragility of the package, the inaccessibility of the delivery site, the urgency of the delivery, the lack of a suitable transportation network at the destination, or the presence of adverse weather, natural catastrophes, or heavy traffic[10]. There are several constraints on the practical use of tiny drones, including those imposed by their cargo capacity, flying time, power source, and other technical aspects[11]. Short-range drones have a maximum flight distance of about 3 kilometres, whereas long-range drones may go as far as 80 kilometres[12]. Drones rely on lithium-ion batteries because they provide energy and power. One of the most challenging and potentially dangerous aspects of drone operations is the drones' batteries. Drone flying duration is directly proportional to the strength of the battery, with a more robust battery keeping the drone aloft for a more extended amount of time. The average flying time for a drone is between 15 and 60 minutes. If the power supplies are of military standard quality, they can endure for two to four hours. Drones significantly impact the environment because they consume electricity, which is, in turn, affected by the batteries that determine the drone's flying time[13]. The present state of technology means that the drone's battery life is a constraint that might slow the delivery of medical help. Battery life for drones is often variable and proportional to how often the drone is flown. If the drone's flying profile requires a lot of extra energy, the battery will drain quickly, and the flight time will be cut short[14], [15]. Therefore, it is essential to maximise drone flight duration by decreasing the number of take-offs and landings since they add time to the total flight and increase energy consumption. The primary goal of this research is to determine how to extend the life of drone batteries. This article details research into the mechanisms that might increase the drone's battery life and efficiently deliver first aid supplies. The drone now has the newly built tool. Providing the kits from the air to the ground will transport the medical equipment securely while reducing the number of take-offs and landings.

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