ŁOTWA SYSTEM

Cost-effectiveness of 25kW solar-powered container for drone stations

Overview

The introduction of Unmanned Arial Vehicles (UAVs) in smart city operations is considered a sustainable technological solution due to the promised significant greenhouse gas emission reductions. This study.

Are UAVs a good choice for Island photovoltaic charging stations?

Dang et al. (2021) propose a multi-criteria decision-making framework for island photovoltaic charging station site selection. While literature is abundant on ground vehicles and ships, UAVs have had less share of this focus. Compared to ground vehicles, the average UAV range is 3 km, which is significantly lower.

How can a UAV reduce travel and energy cost?

That said, in the case of UAVs, studies suggest logistical approaches such as multi-trip drone routing problem (Cheng et al., 2020) to minimize the travel and energy cost under time window constraints. Another solution is proposed by Bian, (2021) to minimize the total mission time via a GA.

Can building-integrated photovoltaics and UAV recharging stations reduce energy consumption?

Upgrading these building envelopes by deploying building-integrated photovoltaics (BIPV) and allocating UAV recharging stations on their roofs would represent a dual green solution. The environmental benefits of reducing energy consumption in upgraded buildings are coupled with generating clean electricity required for the UAV charging functions.

How much power does a UAV use per charge stop?

Under this strategy, UAV charging power levels per charge stop vary greatly, 0.03–0.15 kW per vehicle, depending on the trajectory and SoC, but are still in line with that of current off-shelf UAV technology. Fig. 7.

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