Solar Energy South Africa

UAV infrared detection photovoltaic panels

Overview

Can a UAV be used to inspect a photovoltaic plant?

For more information on the journal statistics, click here . Multiple requests from the same IP address are counted as one view. Because photovoltaic (PV) plants require periodic maintenance, using unmanned aerial vehicles (UAV) for inspections can help reduce costs. Usually, the thermal and visual inspection of PV installations works as follows.

Can drone IR cameras detect faults in solar PV plants?

The objective of this research is to compare the fault detection analyses performed, for two different solar PV plants, using alternatively an unmanned drone and a manned aircraft as aerial platforms, equipped with different IR cameras to provide reliable and comparable thermal images over the same inspected sites.

Are aircraft-based inspections better than UAV surveys for solar PV plants?

Airplane-based inspections are more convenient than UAV surveys for PV plants > 40 MW. The continuous increase in the number and scale of solar photovoltaic power plants requires the implementation of reliable diagnostic tools for fault detection.

Which UAV is used in a PV simulation?

The UAV selected for this simulation is the DJI S900. The route is designed to analyse each PV panel in the same FOV conditions, adapting its hight depending on the PV positioning and FOV conditions. Therefore, the route is based on 432 points with different height and coordinates defined by the GPS and RTK systems to compare both results.

Can aerial infrared thermography be used to inspect PV plants?

This study presents two distinct techniques for aerial infrared thermography (aIRT) inspection of PV plants, employing remote sensing via UAV and aircraft

platforms.

Can uav photogrammetry be used for Autonomous inspection of PV plants?

The autonomous inspection of PV plants through UAV photogrammetry has been explored in the literature [14, 15, 29, 30]. The UAV is given a set of waypoints, usually arranged in such a way as to cover a delimited area to ensure the required horizontal and vertical overlapping of images.

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Identification and localization of Photovoltaic Defect from UAV ...

Therefore, timely detection of photovoltaic panel defects can promote the safe and efficient operation of photovoltaic power plants[2]. There are two types of fault detection for solar the ...

Lightweight Hot-Spot Fault Detection Model of Photovoltaic Panels ...

power stations, many scholars also shifted their research focus to infrared photovoltaic images taken by the UAV. Pierdicca et al. [26] sent infrared photovoltaic panel images collected by ...

Automatic Photovoltaic Panel Area Extraction from UAV Thermal Infrared

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Research on Fault Object Detection Method for Photovoltaic Panel UAV

Photovoltaic panels are the core equipment of photovoltaic power plants and require regular inspections. To improve inspection efficiency, unmanned aerial vehicles are currently mainly ...

A bright spot detection and analysis method for ...

The application of unmanned aerial vehicle (UAV) infrared detection technology in PV power generation can not only improve work efficiency, but also have high economic benefits. This paper based on U-Net ...

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