J Aeronaut Aerospace Eng 2015, 3:3
http://dx.doi.org/10.4172/2168-9792.S1.008

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International Conference and Exhibition on
Satellite
August 17-19, 2015 Houston, USA

An approach to defect detection and yield control of grid-connected PV systems via satellite monitoring

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In the case of unexpected occurrence due to an unforeseen defect, the grid-connected photovoltaic systems could operate below their optimal performance. Thus, the implementation of a monitoring system becomes paramount to measure the energy yield and to assess the system performance.The monitoring-inverter via a router, which is a device integrating a smart phone, will communicate by satellite. To allow the satellite communication, it is necessary to integrate a data-logger and a chip inside the inverter. The present work focuses on the defect detection in a grid-connected photovoltaic system by satellite monitoring, and the yield control for timely intervention to prevent economic losses. Throughout the literature review, we will present some approaches and methodologies. We will discuss, among other points, the limits of the approaches. We will then present our proposed methodology as a promising approach for defect detection grid-connected PV systems via satellite monitoring, achieving highly good results.

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Airships – An innovative and low-cost way to improvements in the area of satellite technologies

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Airships are high-altitude platforms that offer promising and low-cost approach to deal with the satellite technologies. The airships are comparatively easy to be operated, cheap and light platforms. They offer a good alternative for network operators - to get more coverage to satisfy the increasing demand for more capacity; they are being examined and currently applied for application not only for broadband communications, but also for navigation, emergency services, traffic monitoring, military purposes, area surveillance, to transport satellites to definite altitude, etc. There are various currently running projects related to high altitude platforms, especially to airships and their possible application in satellite technologies. The current paper provides a thorough overview of the technologies related to airships as high-altitude platforms with satellite applications. Also, it discusses the idea, ongoing work and results regarding an unmanned lighter-than-air vehicle to transport satellites to low and higher orbits. The operating altitude is in the range of 16 km – 22 km. To minimize weight, the platform will be composed of high, strength but very light materials and will use lightweight innovative propulsion technologies. The airship will need a power source to maintain its position within definite kilometers in radius. The aircraft is envisaged to continuous flight into the wind and uses electric motors to avoid drifting and to keep its position. Possibilities to apply the airship as small satellite positioned at low orbits are researched also. The current research and its outcomes will significantly bring to positive solutions, overcome the high costs of conventional satellites, and affect the deployment and future developments in the field of high-altitude systems.

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