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Patent Search

Invention Title	DESIGN AND IMPLEMENTATION OF AN ADAPTIVE WIRELESS ENERGY HARVESTING SYSTEM FOR SUSTAINABLE POWER MANAGEMENT
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Abstract:

The adaptive wireless energy harvesting system presented herein revolutionizes sustainable power management by efficiently capturing ambient energy from various sou and dynamically optimizing energy extraction through adaptive control algorithms. Integrating solar, kinetic, thermal, and RF harvesting techniques, the system ensures re in powering electronic devices and sensors, even in remote or off-grid locations. With advanced MPPT algorithms for solar panels and innovative sun-tracking mechanisms well as efficient piezoelectric transducers and vibration sensors for kinetic energy capture, the system maximizes energy harvesting efficiency. Furthermore, energy storag elements and wireless communication capabilities enable seamless power distribution and remote monitoring, making this system a versatile solution for diverse applicat ranging from environmental sensing to industrial IoT deployments.

Complete Specification**Description:FIELD OF THE INVENTION**

The present invention relates to the field of renewable energy systems and power management technologies. More specifically, it pertains to the design and implementation of an adaptive wireless energy harvesting system aimed at efficiently capturing ambient energy from the environment and converting it into usable electrical power. This invention addresses the need for sustainable power solutions, particularly in scenarios where traditional power sources are unavailable or impracti such as remote or inaccessible locations. The system utilizes various energy harvesting techniques and adaptive control algorithms to optimize energy extraction and ensure reliable power management for low-power electronic devices, sensors, and IoT nodes.

BACKGROUND OF THE INVENTION

The following description of related art is intended to provide background information pertaining to the field of the disclosure. This section may include certain aspects c the art that may be related to various features of the present disclosure. However, it should be appreciated that this section be used only to enhance the understanding the reader with respect to the present disclosure, and not as admissions of prior art.

In today's rapidly evolving technological landscape, there is a growing demand for sustainable and efficient power solutions to meet the energy needs of various electror devices, sensors, and IoT systems. Traditional power sources, such as batteries and grid connections, are often limited in their availability and pose challenges in remote off-grid environments. Moreover, the increasing emphasis on energy efficiency and environmental sustainability necessitates the development of alternative power

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