

Exploring Wheel-Motion Energy Sources for Energy Harvesting Based on Electromagnetic Effect: Experimental and Numerical Investigation

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Abstract : With the rapid emergence and evolution of renewable energy sources like wind and solar power, there is an increasing demand for effective energy harvester architectures. This paper focuses on investigating the concept of energy harvesting using a wheel-motion energy source. The proposed method involves the placement of magnets and copper coils inside the hubcap rod of a wheel. When the wheel is set in motion, following Faraday's Law, the movement of the magnet within the coil induces an electric current. The paper includes an experiment to measure the output voltage of electromagnetics, as well as a numerical simulation to further explore the potential of this energy harvesting approach. By harnessing the rotational motion of wheels, this research aims to contribute to the development of innovative techniques for generating electrical power in a sustainable and efficient manner.

Keywords : harvesting energy, electromagnetic, hubcap rod wheel, magnet movement inside coil, faraday law

Conference Title : ICEHSPE 2024 : International Conference on Energy Harvesting Systems and Power Engineering

Conference Location : Montreal, Canada

Conference Dates : June 13-14, 2024