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Energy Harvesting Device

Overview

Researchers from UL have developed a novel, patented, inexpensive 'fit and forget' energy harvesting solution that converts ambient vibrations into electrical power. The new technology eliminates the need for batteries and is tailored to power low energy sensors for Internet of Things (IoT) applications.

The sensor is targeting the rapidly expanding wireless sensor network market. This is projected to grow from sales of $430M in 2015 to $1,580M by 2022.

The key breakthrough of this new technology is that it captures energy effectively across a wide range of vibration input frequencies. It is easily tuneable so that it can be optimised on site when being fitted. The technology has already been demonstrated to outperform existing products on the market.

Main Features

- Uses patented technology, implemented to TRL 6
- Optimised for a sizeable and growing market
- Small size and light weight
- Works in any vibration environment
- Best in class operation
- Tuneable for optimisation over a range of input frequencies
- Suitable for a wide range of IoT sensors and communications protocols – 3.3V standard output
- Developed by world class team of industry engaged researchers

Applications

The Energy Harvester is an environmentally-friendly alternative to batteries for remote or difficult-to-access applications such as:

- Industrial monitoring
- Agriculture
- Automotive, railway, aeronautical
- Human motion
- Structural monitoring

Energy Harvester vs standard "D" battery

The Technology

The Energy Harvester is based on a multimodal, two degree-of-freedom, nonlinear oscillator. It consists of a multi-mass combination which exploits a novel, patented, velocity amplification principle to enhance the performance.

The resonant frequency of the device can be tuned, via an adjustable cap, to match the input vibration source. This unique feature allows for a greater application space.

Further information available at www.stokespower.ie

Commercial Opportunity

UL is interested in seeking partners to exploit this technology. The technology is available for license, as the basis of a new Spin Out company and/or as the basis of further development projects.

IP Status

US Granted Patent no. 8350394.

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