CASE STUDY

SOFTSERVE'S TEGBAND - AMBIENT ENERGY POWER HARVESTING FOR BATTERY FREE APPLICATIONS

Background

SoftServe 's R&D Group is pioneering the efficient power usage in intelligent devices with the purpose to build a battery free application that will not require any maintenance expenses or extension of battery life via the use of ambient power sources, such as wireless radio, temperature, indoor lighting, or vibrations.

Previous research has shown that ambient energy can be used in the devices with ultra-low power consumption and produce efficient power management that involves hardware, firmware, and software designs.

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Business Challenge

The power and maintenance of indoor sensors has become critical for these types of applications. The common requirements for the sensors are a small size and access to the main power source. Challenges around this can be seen across numerous industry verticals where battery efficiency is essential for cost effectiveness and business continuity. For example, the oil and gas industry commonly requires data gathering from infrastructure where the battery replacement is very expensive and time consuming. Additionally, transportation and logistics services need real-time tracking capabilities of the high value cargo, requiring reliable, continuous power for these trackers over their lifetime.

Project Description

SoftServe's TegBand Project demonstrates the ability to use this ambient thermal energy for power harvesting to run battery free applications. The device prototype built into a band format works from the heat of the human body. It validates the concept of battery free devices that can be used to execute communication and sensing tasks.

The harvested energy is stored in the single 1.5mF tantalum capacitor. The power level is sufficient to power a microcontroller unit (MCU), digital sensor, and LED; as well as measure the environmental condition, support communication with the smartphone, and provide visual feedback to the user.

Value Delivered

Thermal energy harvesting provides stable power output with the presence of a temperature gradient with an efficiency greater than that produced by ambient radio or vibration.

SoftServe's TegBand application holds the potential to power wearable devices in battery free environments to monitor systems with zero cost maintenance.

ABOUT US

SoftServe is a digital authority that advises and provides at the cutting-edge of technology. We reveal, transform, accelerate, and optimize the way enterprises and software companies do business. With expertise across healthcare, retail, media, financial services, software, and more, we implement end-to-end solutions to deliver the innovation, quality, and speed that our clients' users expect.

SoftServe delivers open innovation—from generating compelling new ideas, to developing and implementing transformational products and services.

Our work and client experience are built on a foundation of empathetic, human-focused design that ensures continuity from concept to release.

We empower enterprises and software companies to (re)identify differentiation, accelerate solution development, and vigorously compete in today's digital economy—No matter where you are in your journey.

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