

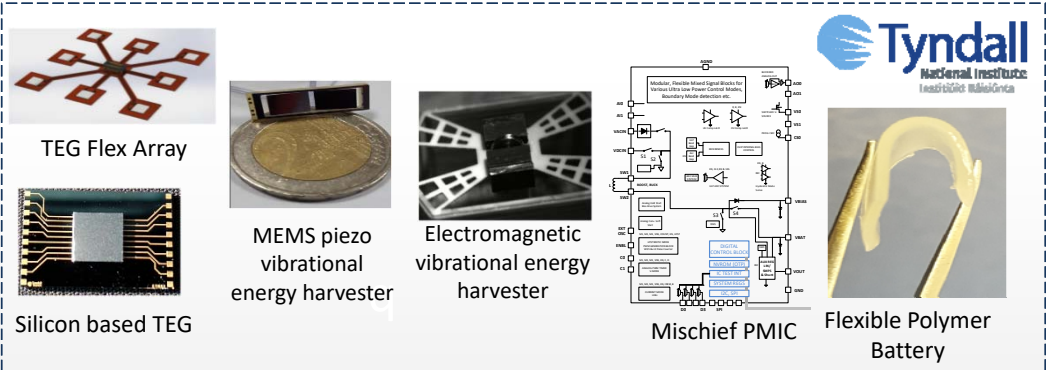
Energy Source-in-Package (eSiP)

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ABSTRACT: The world will have 1 trillion IoT devices by 2025 all needing a power source. Most of these will be wireless sensors at the 'edge' using a 'battery'. We need to ideally make the battery outlive the device it powers to minimize downtime, maintenance overheads and risk of data loss. We also need our solution to be sustainable, based on eco design and minimizing the number of batteries that end up in landfills. Many applications have harvestable ambient energies available, and these can be used at least to prolong battery life and, in many cases, eliminate the need for battery replacement. One solution for devices is to have and energy harvester, PMIC, and battery in a single package. The eSiP aims to provide this solution.

Introduction

Tyndall already develops world leading energy harvesting, storage and CMOS based micro-power management solutions. To drive their integration at device and system level, internally and in collaboration with other external industry and academic stakeholders, we have created 2 research programs supported by the Science Foundation Ireland CONNECT research cluster. One of which is the eSiP



Benefits

A unique opportunity for both industry and academic partners to integrate components into the eSiP, assess how well they work as a system level, targeted at real life application.

-> Optimize device design, address interoperability challenges.

Singular Chip - Smaller Footprint

Pre-Designed IHI Circuit - Plug-and-play Energy Harvested Energy Solution

Plug-and-play Solution - Easier Use by Non-Specialized Personnel

Technology Implemented

- PCB, TEG, PMIC and Battery combined solution provides a usable voltage to a wireless sensor or wearable device
- Tyndall is open to all energy harvesting mechanisms, digital power management ICs, energy storage solutions, PCB substrates and collaborations with industry and academia

Collaboration Opportunity Via CONNECT

- CONNECT aims to bring research and industry together to develop solutions
- Opportunity for other research institutes and industry partners to collaborate on the eSiP project and any other CONNECT projects

