

Energy-harnessing Integrated Circuits

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Wireless microsensors and other miniaturized electronics cannot only monitor and better-manage power consumption in emerging small- and large-scale applications (for space, military, medical, agricultural, and consumer markets) but also add energy-saving and performance-enhancing intelligence to old, expensive, and difficult-to-replace infrastructures and tiny contraptions in difficult-to-reach places (like the human body). The energy these smart devices store, however, is often insufficient to power the functions they incorporate (such as telemetry, interface, processing, and others) for extended periods. Still more, replacing or recharging the batteries of hundreds of networked nodes is costly, and invasive in the case of the human body. Harvesting ambient energy to continually replenish a battery and wirelessly harnessing radiated energy periodically are therefore appealing alternatives, even if the development of relevant technologies today is, in relative terms, premature. This talk discusses the state of the art and current research efforts in harnessing and conditioning energy and power from miniaturized transducers with integrated circuits (ICs).