Autonomous wireless sensor for building energy management with energy harvesting feasibility

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ABSTRACT

Wireless Sensor Networks (WSN), due to their low cost, energy consumption, and robust communications, present a promising solution for retro-fitting to existing buildings for optimal building control. With the building sector contributing to 30-40% of global CO_2 emissions, it is vital to address home and building energy management.
Smart meters are part of this trend where a meter does not just measure or protect, but can provide valuable information and allow interaction with the system. Additional capabilities and processing power can be obtained by deploying a wireless sensor network system, with autonomous processing nodes, capable of cooperation and reasoning that can provide an intelligent energy management. This paper discusses the main challenges in creating an autonomous WSN and evaluates energy harvesting techniques capable of powering wireless sensor nodes in an occupied building environment.

Keywords: Wireless Sensor Network, Building energy management, Energy harvesting.