

Towards the Enhancement of Buildings' Sustainability: IoT-Based Building Management Systems (IoT-BMS)

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Abstract. The building sector is the primary consumer of energy, especially electricity. Energy consumption results in greenhouse gas emissions, depletion of natural resources, and finance consumption. Nowadays, buildings are increasingly expected to meet higher and more complex performance requirements. Among these requirements, energy efficiency is recognized as an international goal to promote energy sustainability. Therefore, monitoring, controlling, and managing energy are the key goals of building management that opt for energy efficiency and cost-effective operation and maintenance, which are the main objectives of sustainable development goals. The building sector is significant in its function and requires more energy to operate and maintain, especially for lighting, achieving appropriate thermal comfort, and managing IT systems and other equipment. The reliability and flexibility offered by wireless technologies have been the driving force toward the vision of the Internet of Things (IoT). They have contributed to attracting growing interest in the market. This work presents an energy-efficient IoT solution to monitor the energy consumption model by deploying a Building Management System (BMS). Integrating multiple battery-operated sensors into the building allows critical data to be dynamically provided in real-time to improve overall building efficiency. Introducing the IoT in managing energy in buildings can be more cost-effective and convenient than traditional building BMSs.

