

Design and Business Modelling of an IoT Based Cost-Efficient Solar Data Logger with Cellular Monitoring Interface for Decentralized Renewables

Abstract

This paper introduces a cost-effective IoT-based 'Solar Data Logger' designed for real-time monitoring of energy storage within solar power systems. The prototype's performance is rigorously assessed, comparing both technical capabilities and cost-effectiveness against established technologies. Leveraging IoT technology, the system securely stores data in a cloud-based infrastructure while also providing a user-friendly mobile application interface for control and monitoring. Moreover, this research showcases the system's relevance in the emerging field of decentralized renewable energy generation, particularly in Building to Grid (B2G) management. Additionally, the paper offers a comprehensive business model that includes a detailed estimate of expenses for commercializing the prototype, encompassing research and development (R&D) and pilot deployment. Finally, the paper acknowledges its limitations and suggests avenues for future research and development.

Keywords

Business Modelling; Cost-efficiency; Decentralized Energy; IoT; Mobile Interface; Solar Data Logger