

# IOT Based Smart Power Grid Control and Energy Monitoring

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**Abstract:** *The Internet of Things (IoT) has emerged as a promising technology for transforming traditional power grids into smart and efficient systems. This paper presents an IoT-based smart power grid control and energy monitoring system that combines the power of connected devices, sensors, and data analytics to enable real-time monitoring, control, and optimization of energy consumption in power grids. The proposed system leverages IoT devices and sensors deployed across the power grid infrastructure to collect and transmit real-time data on energy consumption, generation, and distribution. This data is then processed and analysed using advanced analytics techniques to provide valuable insights and enable effective decision-making for energy management. The smart power grid control and energy monitoring system offer several key features. Firstly, it provides real-time monitoring of energy consumption at various levels, including individual appliances, buildings, and the overall grid. This enables users to identify energy-intensive areas, track usage patterns, and implement energy-saving strategies. Secondly, the system enables remote control and automation of energy-consuming devices, allowing for dynamic load management and demand response. By optimizing energy usage based on real-time data and demand forecasts, the system helps to reduce peak loads, balance energy supply and demand, and enhance grid stability. Furthermore, the system facilitates the integration and management of renewable energy sources, such as solar panels and wind turbines, by monitoring their generation and optimizing their utilization within the grid.*

**Keywords:** Power monitoring, IOT, Smart Grid, Blynk, voltage and current, sensor

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