# पेटेंट कार्यालय
# शासकीय जर्नल

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(57) Abstract :
The Present invention describes an IoT-enabled monitoring and management system designed to improve renewable energy use in sustainable communities by employing intelligent sensors, IoT devices, and controllers to collect real-time data on energy generation, consumption, and storage from sources such as solar panels, wind turbines, and micro-hydro systems. Using wireless communication technologies like LoRaWAN, Zigbee, or 5G, the data is sent to cloud or edge platforms where heuristic and predictive algorithms optimize load scheduling, energy storage, and distribution to reduce reliance on conventional grids. The system supports microgrid islanding, peak load management, and energy shifting to enhance grid stability and resilience, while providing a user interface for real-time monitoring, alerts, and optimization insights, all secured with robust cybersecurity measures to promote energy efficiency, community self-reliance, and sustainable development. FIG.1

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