(12) PATENT APPLICATION PUBLICATION

(19) INDIA

(22) Date of filing of Application :27/03/2025

(21) Application No.202541028986 A

(43) Publication Date : 25/04/2025

(54) Title of the invention : Automated Sector-Based Power Management and Alert System Through IoT

(51) International classification :G06Q0050060000, G06Q0030020100, G01R0022060000, H02J0013000000, G05B0015020000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :

Smart energy grid is a transformative approach to managing, distributing, and optimizing energy in modern societies, leveraging advanced technologies to meet growing energy demands effectively. An Arduino Uno, current sensors, a relay module, an LCD display, and cloud connectivity are all used in this clever energy-saving system to provide real-time power load control and distribution in three different sectors: homes, businesses, and agricultural. Using sensors, the system gathers power usage data from every sector and sends it to the cloud over Wi-Fi for storage and viewing. Consumption data is displayed as graphs in the thing view app through ThingSpeak cloud and as values on an LCD display. A Telegram bot that is activated when power is spread across sectors sends users real-time alerts in the case of theft. By sending out theft detection alerts, the bot improves user awareness and system response. A distinct channel ID can also be used to download saved data as a data sheet, enabling thorough analysis and documentation. An effective and sustainable energy management solution is ensured by this cutting-edge system, which combines hardware and software to maximize energy use, deter theft, and give users easily accessible insights.

No. of Pages : 17 No. of Claims : 5