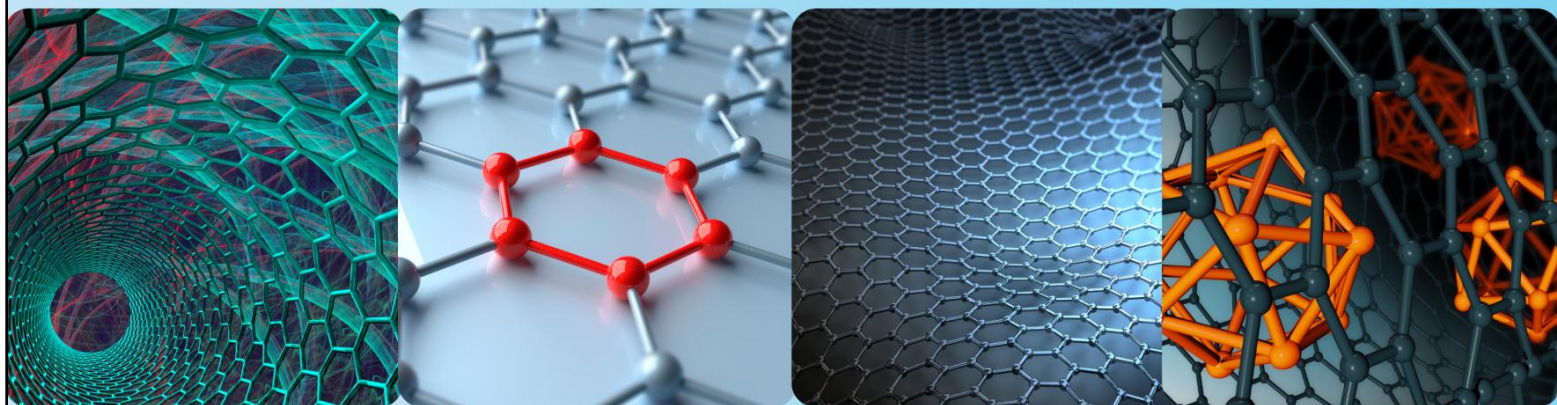


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Editors

Prin. (Dr.) M. M. Rajmane

Prof. (Dr.) J. B. Thorat

Dr. S. H. Pisal

Dr. I. A. Dhole

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SMART AUTOMATIC ENERGY METER FOR BILLING SYSTEM BASED ON IOT

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Abstract:

The effort of collecting, electricity utility meter reading. Internet of Things (IoT) present an efficient and co-effective to transfer the information of energy consumer wirelessly as well as it provides to detect the usage of the electricity the main intention of this project is measure electricity consumption in home appliances and generate its bill automatically using IoT. The energy grid needs to be implemented in a distributed topology that can dynamically absorb different energy sources. IoT can be utilized for various applications of the smart grid with distributed energy plant meter, energy generation and energy consumption smart energy meter, energy demand side management and various area of energy production. On the mobile IoT app, the amount of energy consumed and the consumers reported will be displayed continuously. Both electricity consumers and the utility company would be able to monitor electricity consumption remotely with this method. The system is effective and cross-checked because usage can be monitored remotely by the utility company and users, and revenue received can be double-checked.

Keywords: Smart Energy Meter, IoT System, Google Firebase database

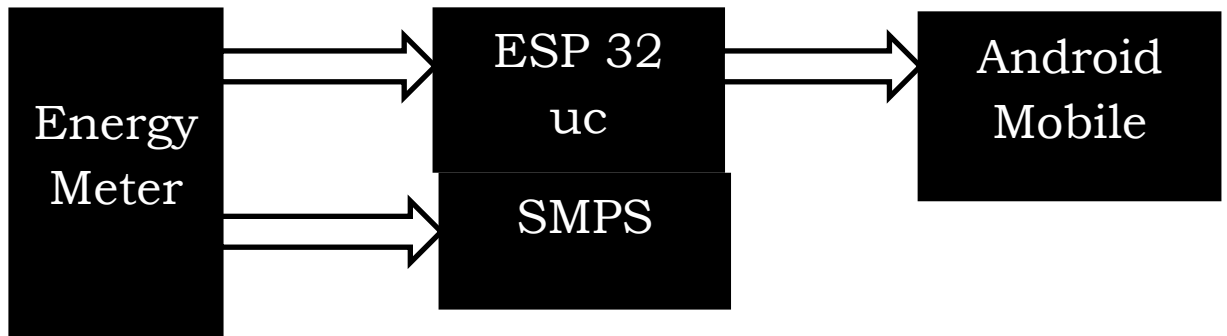
Introduction:

This project describes the digitization of load energy usage readings over the internet. The proposed system design eliminates the involvement of human error in electricity maintenance. The user can monitor energy consumption in watts from a webpage by providing a channel id for the load. The Webpage utilizes the Google Firebase analytics to analyze the energy usage to give more detailed description and visualization of the energy usage statistics. Wi-Fi unit performs IOT operation by sending energy data of the load to the webpage which can be accessed through the channel id of the device. In the proposed system, consumer can do power management by knowing energy usage time to time. This proposed system utilizes an ESP32 microcontroller. The unit which is generated can be displayed on the webpage through the Wi-Fi module.

Objectives:

1. Measure and monitor power usages from anywhere
2. Using wroom ESP32 and send the measured motor pulses values to the IoT cloud.
3. The web page utilizes Google firebase analysis to analyze the energy utilization using JavaScript

Block Diagram:



Working:

In the proposed work I have designed an energy meter with an esp32microcontroller with getting electric pulses with the help of energy which are interfaced with IoT cloud. In the proposed model Firebase cloud is utilized to supply a secured communication between the power boards to the meter. It reduces the human interference to collect the monthly reading and it also saves time and money. To drive the ESP32 uc and the current sensor a control supply. ESP32 module is utilized as a central controlling and checking framework for all gadgets. Hand-off will come into the picture when the charge isn't paid to cut off the control supply. In the proposed model Firebase cloud is utilized to supply a secured communication between the power board to the meter and the same is utilized to alert the shopper when the charging time is come to moreover to send charge subtle elements. The current sensor is utilized to sense control utilization which is interfaces to Hub MCU. The client can get the data approximately the vitality utilization, loads associated, corresponding billed sum through the devoted app which can be in their keen phones by the conclusion of the month. At that point, one can specifically pay our charge through that app. In case the charge was not paid at that point the meter will naturally get turn off. To turn off the meter a few limits esteem can be set for that. Consequently, we are able to effectively to control data.

From this Project we can conclude that by implementing the Intelligent Power Meter system we get bill from the electricity board through the display device attached with the system. By this the meter can communicate with the electricity board through a wireless module.

An additional function attached to this system are when there is a power failure, meter complaint or any other faults with the system, it reports to the electricity board through the wireless module. In the same way a server system is working in the electricity board. It includes

a receiver and transmitter. It always communicates with the power meters attached to all customers.

Conclusion:

In this proposed system we are going to make IoT base android application with java script program with interface google firebase. In google fire base we are creating meter reading program with the help of ESP32 those program interface with IoT application. Whatever meter consuming pulse can calculate and display on android-based phone application.

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