

# Survey Paper On Equipment wise Power Consumption Monitoring System using IOT

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## Abstract-

*Nowadays, electricity consumption has become one of the essential needs in every sector. electricity is that the most used sort of energy during this era, hence its conserved. Control on the utilization of electricity is important. Thus to enhance the efficiency of all electrical equipments and to scale back misuse of electricity is one among the challenge faced by the planet. it's the need to manage consumption of electricity thanks to limited of resources. therefore the aim of this paper is to acknowledge and eliminate the surplus use of electricity.*

**Keywords:** IoT, voltage sensor, current sensor, Electricity.

## 1. INTRODUCTION

Electricity is extremely essential in day to day life, the right utilization of it must be done. We can properly consume the electricity also as calculate the electrical ity consumption by using the electric meter. The vulnerability about the availability of energy can tell the working of whole economy, especially in creating financial aspects. It is the need to manage consumption of electricity thanks to limited availability of resources. So the aim of this paper is to acknowledge and eliminate the misuse of electricity.

Internet of things has helped many organizational systems to strengthen efficiency, increase the speed of processes, minimize error and stop theft by coding and tracking the objects. Computing and communications has its future within the technological transformation brought by the IOT. Power consumption are often reduced to an excellent extent if we will monitor our daily power usage and cut appliances which are unnecessary consuming electricity. This paper focuses on developing a monitoring system using the concept of Internet of Things.

The designed model are often placed before the

transmission of the load in each house of that specific area. The system generates a continuous unit pulse which can communicate with network through an Internet gateway WI-FI. With the assistance of internet accessibility, communication are going to be possible between end-user and therefore the supplier. The supplier can monitor and control the facility consumption of the top user from a foreign place.

## 2. LITERATURE SURVEY

In the system[1] the author has explained the growing demand of energy, the capacity limitations of energy management, one-way communication, the need of an interoperability of the different standards, the security of the communication and therefore the greenhouse emission emissions, results in emerge a replacement infrastructure grid: Smart Grid. In the system, an Arduino solution which provides enhanced end-to-end application. It is supported an energy meter with low-power microcontroller and therefore the power cable Communication standards. The aim of this work was to realize a real time pricing thanks to the proposed communication infrastructure.

In the system[2] the author has described low cost real-time Arduino-based energy management system is proposed. It was conceived as part of a distributed system that measures the main power system quantities and give the possibility to manage the whole power plant. An integrated Web Server allows to gather the statistics of power consumptions, power quality and is in a position to interface devices for load displacement. The device was characterized by quick access to the knowledge and therefore the combination of a sensible meter and digital communication capability allow local and remote access. In this way it was possible to manage the power consumption of the power system leading to an overall reduction in consumption and costs.

In the system [3] the author has illustrated the Presently electronics energy measurement is continuously replacing existing technology of electromechanical

meters especially in China and India. By the year 2004, digital meter has start replacing electromechanical meters in Singapore. A wireless digital energy meter would definitely offer greater convenience to the meter reading task. Bluetooth technology is chosen as a possible wireless solution to this issue. In the system, the author resent the design and implementation issues of a Bluetooth enabled energy meter. The energy reader can collect the energy consumption reading from the energy meter wirelessly supported Bluetooth.

The system [4] described Microcontroller based design and implementation of energy meter using IoT concept. The system design eliminates the human involvement in Electricity maintenance. The Buyer must buy the usage of electricity on schedule, just just in case that he couldn't pay, the electricity transmission are often turned off autonomously from the distant server. The user can monitor the energy consumption in units from an internet page by providing device IP address. Theft detection unit connected to energy meter notify company side when meter tampering occurs in energy meter and it send theft detect information through PLC modem and theft detected and was displayed on the terminal window of the company side. Wi-Fi unit performs the IoT operation by sending energy meter data to website which may be accessed through IP address. Many people does not get to know by which device electricity bill is increasing. The system let user know each and every device's electricity and voltage consumption.

The system[5] the author has explained the growing demand of energy, the capacity limitations of energy management, one-way communication, the need of an interoperability of the different standards, the security of the communication and therefore the greenhouse emission emissions, results in emerge a replacement infrastructure grid: Smart Grid. Smart Meters are one among the proposed solutions for the Smart Grid. An Arduino solution which provides enhanced end-to-end application. It is supported an energy meter with low-power microcontroller and therefore the power cable Communication

### 3. Methodology

#### 3.1 Block Diagram:

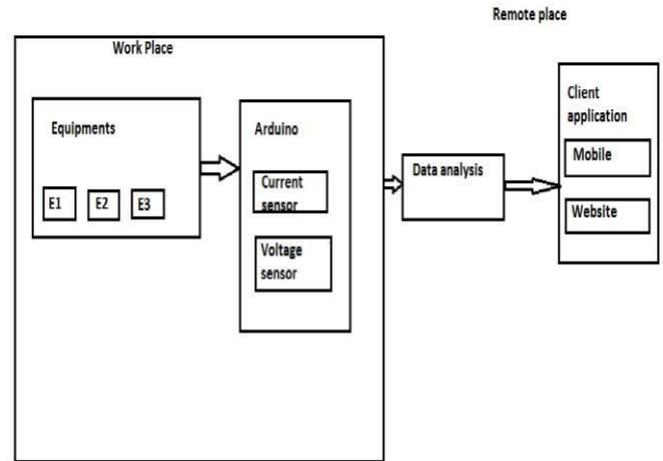


Fig. 01 Block Diagram

The equipments are connected to the hardware which will contain various sensors like current sensors, voltage sensors, etc. The sensors will sense the amount of power consumed per time. The sensors will be connected to the Arduino that will have Arduino code and from that code the amount of power consumed per time will be displayed on the mobile app or website. As per the consumption of devices the system will generate bill.

#### 3.2 Aim and Objectives:

##### Aim:

The aim of this project is to create an automated system which will monitor the power of equipments and generates the bill according to equipments usage.

##### Objectives:

- To manage the information of Electricity.
- to extend efficiency of managing the Electricity, Bill.
- To show the information and description of the Electricity, Connections.
- To provide economic/financial reports to the owner daily, weekly or monthly.
- To provide an easy to use environment for users and customers.
- To manage information of Bill.

#### 3.3 Hardware Modules

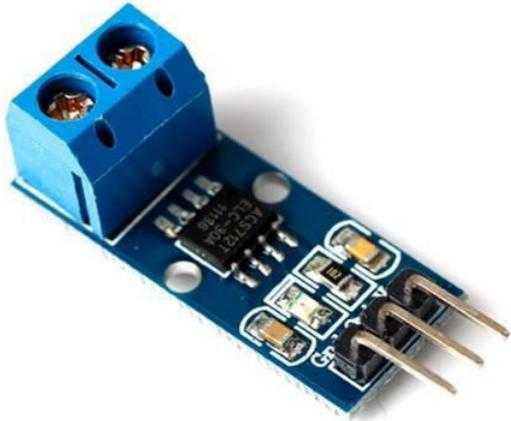
##### 3.3.1 Arduino



Fig 2: Arduino

The Arduino Uno is an open-source microcontroller board supported the Microchip ATmega328P microcontroller and developed by Arduino.cc. In this system it will take inputs from the sensors and it will calculate the power consumed by the particular device and send the analysed data on phone or website.

### 3.3.2 Current Sensor



**Fig 3:Current sensor**

A current sensor may be a device that detects current during a wire, and generates a sign proportional thereto current. The analog or digital data generated by the device will be sensed by the sensor and it will be send to the Arduino for further calculation.

### 3.3.3 Voltage Sensor

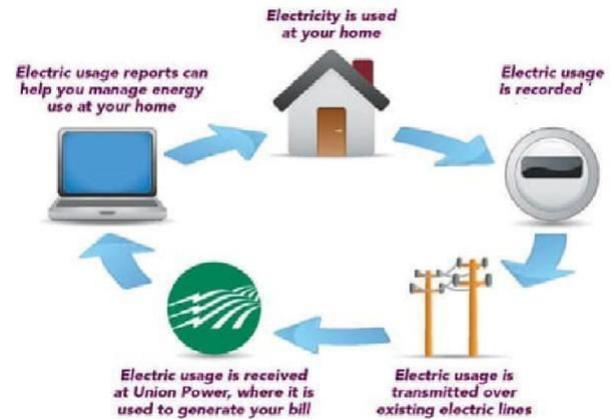


**Fig 4:Voltage sensor**

A voltage sensor goes to be ready to determine and even monitor and measure the voltage supply. It is then ready to take those measurements and switch them into a sign that one will then be ready to read. It will sense the analog data from the device and will send to Arduino for calculation.

## 3.4 Software

### 3.4.1 Bill Generation



**Fig 5:Bill Generating System**

The electricity consumed at our home will be monitored equipmentwise which is in the form of current and voltage. The analysed data will be recorded and sent to arduino and it will further calculate the data and send to user's device which can be laptop or android phone or also it can be seen on website.

According to the power consumption, the data which is calculated by sensors will be displayed and accordingly the bill of the equipments will be generated. The calculated bill by the system will be sent to the electricity department. From this the user will get the idea that which equipment is consuming more electricity and then the user will manage the usage of equipments accordingly.

## 4 Advantages and Applications

### Advantages:

**Data:** The more the information, the easier it is to make the right decision.

**Time:** The quantity of your time saved in monitoring and therefore the number of trips done otherwise would be tremendous.

**Money:** The financial aspect is the best advantage.

### Applications:

**Home:** The usage of home appliances with their power will be displayed.

**Malls:** Many electrical devices which works continuously so the system will come to know how to use it in a proper way.

**Airport:** Airport has many electrical devices which need continuous power supply so that can also be controlled.

**Organizations:** It has heavy use of electrical devices so the system will measure the power usage.

## CONCLUSION

With the help of this model power consumption of a customer is monitored. When the user exceeds his limit of power consumption the availability of power will cut off automatically. The usage of each consumer within the region or sector is shipped to the blynk server. Supplier will be notified about the power consumption of the entire region or sector. The supplier can monitor and control the facility usage of the user also because the entire region. The power consumption data sheet of the whole region is generated and analyzed. If the generated data is provided to the purchasers, they will compare their usage with the info sheet. So this will help to identify the fraudulent user who is stealing the users power by direct hooking method.

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