IOT BASED REAL TIME ENERGY METER

[1]Miss. J. S. Kate, [2]Mr. B. B. Gupta, [3]Mr. S. N.Husain, [4]Mr. A. S. Lingayt, [5]Mr. S. P. Adure
[1,2,3,4]UG Students, [5]Faculty, Electronics and Telecommunication Engineering Department, Rajendra Mane College of Engineering & Technology,Ambav (Devrukh), Ratnagiri, Maharashtra, India
[1]1katejagrutisudhir123@gmail.com [2]bholagupta06@gmail.com , [3]shahnavajhusain67@gmail.com,
[4]ajaykumarslingayat12345@gmail.com, [5]aduresp@gmail.com

Abstract **This research paper aims to develop an IOT based real time energy meter. As we all know about the traditional energy meters which are installed at everyone's home. This traditional method of bill calculation have certain disadvantages like sometimes we get extra bill amount, sometimes we have to pay due for the already paid bill. So, we are designing the system to overcome this entire problem. In proposed system we monitor the amount of power consumed by the user time to time and the cost for the consumed power over the internet using Arduino Uno, ESP8266 Wi-Fi module and ASC712 current sensor.**

Keywords **Arduino, *ESP8266, ACS712, IOT.***

I. INTRODUCTION

As we know about the energy meter which are installed at everyone's home to calculate the consumption of energy. Every middle-class family have their monthly budget .At the end of every month they are worried about high electricity bill and they have to look at the energy meter once in a while. But if they are able to monitor the electricity uses over the internet from anywhere in the world and get an SMS/Gmail when their energy consumption reaches to a threshold value then it will help to reduce the wastage of energy. So here we are presenting the research paper on "IOT BASED REAL TIME ENERGY METER".

In present billing system the person from MSEB visit our house at the end of every month .He take the reading and according to that bill amount will be calculated. These methods have certain drawbacks. To overcome this problem we have designed the proposed system to monitor the amount of consumed power and cost over the internet by using Arduino Uno, ESP8266 Wi-Fi module and ACS712 current sensor. In this system one threshold level is set and when the user reached that threshold level then one mail will be send to the user. Also one app is provided to the user over which he can observe how much energy consumed by him. IFTTT platform is used to send an E-mail.

II. LITERATURE REVIEW

1. Jithin Jose K, Leneesh Mohan, Nijeesh U K, Tony C Benny "Smart Energy Meter" International Journal of Engineering Trends and Technology (IJETT) – Volume22 Number 4-April 2015 :-System design using GSM module, Microcontroller PIC16f877A

   Advantage-1.calculate power consumed automatically

   2. Reduced labour charges

   Disadvantages: 1complex circuitry

   2billing system fails if no GSM network coverage

2.Giri Prasad, Akesh, BalaPravin , Gokila Devi, Gowri Devi Assistant Professor 2,5Student Members- "**IoT BASED ENERGY METER"** International Journal of Recent Trends in Engineering & Research (IJRTER):- In this project work ,they uses ARM7,Arduino uno,ESP8266 Wi-Fi module. The energy meter is connected to the controller through 555 timer to give the information about the energy consumed and bill. Bill amount calculated using the formula,

Bill = consumed units * 3 + 50

To monitor the data over internet Thing speak site is used. Data send over the thingspeak.com using ESP8266 Wi-Fi module.

Advantages-1.wireless system

2. Monitor data over internet

Disadvantages-1.It uses traditional energy meter

2. Uses GSM module

3.Birendrakumar Sahani1, Tejashree Ravi2, Akibjaved Tamboli3 , Ranjeet Pisal4 "**IoT Based Smart Energy Meter**" International Research Journal of Engineering and Technology (IRJET)Volume: 04 Issue: 04 | Apr -2017:- In this research paper they introduced the idea of smart energy meter using arduino and IOT. In this system, the energy meter which is already installed in everyone's house kept as it is and the additional circuitry is connected to monitor the reading. They uses GSM module to provide notification through SMS. They have designed one webpage to display current reading with cost. Also

ESP8266 Wi-Fi module is used to send the data on the webpage.

Advantages-1.wireless system
2. Monitor data over internet

III. SYSTEM DESIGN

The Figure1 consists of Arduino Uno which is a heart of proposed system, ESP8266 Wi-Fi module, ACS712 current sensor, and any AC appliances.

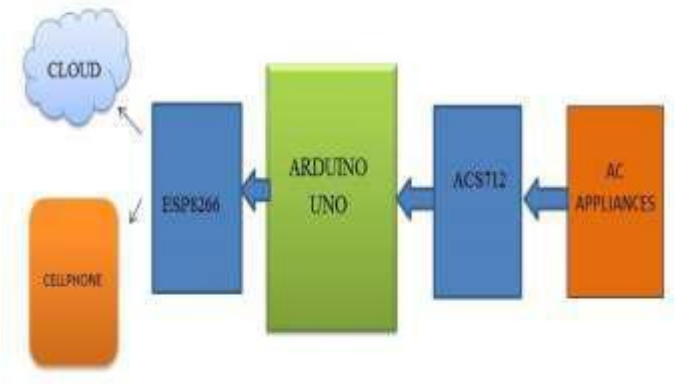

Figure 1: Block diagram

IV. PROPOSED METHODOLOGY

In this research paper we are going to design IOT based real time energy meter. To avoid the mistakes during calculation of bill we are design energy meter using ACS712 current sensor.AC appliances are connected to main AC supply and current sensor. The output of sensor is applied to the arduino board. Wi-Fi module is connected to the arduino board to send the data over internet. Earlier systems use the traditional energy meters and then monitors the data. But we are design a system which calculate the amount of power consumed as well as bill automatically. The cost and power are displayed on the MQTT platform. Also we are setting one threshold level when the cost reach to that threshold then mail is send to the authorized person. For that purpose we are using IFTTT.MQTT app is also provided to the user to monitor the power consumed by him or the cost for the consumed power.

V. OBJECTIVE OF THE PROJECT

The main objective of the research paper is to develop an IOT based electricity meter reading displayed for units consumed and cost there upon over the internet. Set the threshold level, when this level is reached then sends an Gmail to the user so that user can reduced the use of power. Save electricity, money, time and man power are the main objective of our research paper.

VI. ADVANTAGES

- Reduced the time for receiving the bill

Disadvantages-1.It uses traditional energy meter 2. Uses GSM module

- Eliminate errors occur during manual reading
- It also reduced the wastage of energy
- Save the time, pages and money
- Reduced the manpower

VII. APPLICATION

- Government energy plant.
- MSEB.
- Public Power Sources.
- Municipal Corporation.

VIII. CONCLUSION

This research paper overcomes the disadvantages of existing system. This paper explains the components and block diagram of proposed system. This system helps to avoid the wastage of energy. This system makes the electricity bill accurate without anyone's interference. By using the proposed system users are able to know how much energy the consumed and how much cost for that they have to pay.

ACKNOWLEDGMENT

It gives us great pleasure in presenting the paper on "IoT Based Real time Energy Meter". We would like to thank Rajendra Mane College of Engineering and Technology for giving us this opportunity. Special thanks to our parents and all the teachers for helping us whenever we needed.

REFERENCES

[1]Jithin Jose K, Leneesh Mohan, Nijeesh U K, Tony C Benny "**Smart Energy Meter**" International Journal of Engineering Trends and Technology (IJETT) – Volume22 Number 4- April2015

[2]Giri Prasad, Akesh, BalaPravin, Gokila Devi, Gowri Devi Assistant Professor 2,5Student Members- "**IoT BASED ENERGY METER"** International Journal of Recent Trends in Engineering & Research (IJRTER)

[3]Birendrakumar Sahani1, Tejashree Ravi2, AkibjavedTamboli3, Ranjeet Pisal4 "**IoT Based Smart Energy Meter**" International Research Journal of Engineering and Technology (IRJET) Volume: 04 Issue: 04 | Apr -2017

[4]Mr. Samarth Pandit Miss. SnehaMandhre Miss. MeghanaNichal "**Smart Energy Meter using internet of Things (IoT)"** Vishwakarma Journal of Engineering Research(VJER) Volume 1 Issue 2, June 2017