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# Smart Energy Meter for Energy Conservation

M. Mohammed John<sup>1</sup>, G. Partheepan<sup>2</sup>, P. Sasikumar<sup>3</sup>, S. Veena<sup>4</sup>

<sup>1, 2, 3, 4</sup>Department of computer science, S.A. Engineering college

**Abstract:** Traditional meter reading system is used now-a-days for calculating the current readings. Electricity is the driving force behind the development of any country. With the rapid increase in residential, commercial, and industrial consumers of electricity throughout the world, it has now become imperative for utilities companies to devise better, non-intrusive, environmentally-safe techniques of gauging utilities' consumption so that correct bills can be generated and invoiced. The Invention of smart meters has changed the process of billing generation system over commercial usage of energy which was previously done using digital meter. A major gap is explored after finding the advantages and limitations of existing techniques followed by brief highlights of the feasible line of research to compensate the unaddressed problems associated with research work direction towards smart meters.

**Keywords:** Digital Meter; Energy; Power Distribution; Performance; Privacy Smart Meter;

## I. INTRODUCTION

Human assistance is still required to unit read from energy meter to record the units from the houses. The remedy for all these problems is to keep track of the consumers load on timely basis, which will held to assure accurate billing, track maximum demand and to detect threshold value. The evolution of Smart meters around many countries have been deployed since 2000's. The smart Meter has been a key element for the smart grid and it is expected to provide economic, environmental benefits for multiple stakeholders. smart meter data analytics is one of the key factor that will determine the success of smart meter. This helps to deals with data acquisition transmission, processing, and interpretation that bring benefits to all stakeholders. Different from conventional analogue meters, the readings from the smart meters are in digital form that is automatically sent to the suppliers by various communication means.

## II. RELATED WORKS

### A. IoT Based Smart Energy Meter

Smart meters really don't save any energy but it just makes customer aware about their usage scenario and the entire decision is left to the customer. This paper reduces the manual work load of people in electricity board. It mainly deals with smart energy meter, which utilizes the features of embedded systems i.e. combination of hardware and software in order to implement desired functionality. The energy meters which is already installed at our houses are not replaced, but a small modification on the already installed meters an change the existing meters into smart meters. It is also disconnect the power supply when it is needed at the end of each month usage of the current bill is send to the customer in the form of text at first day of every month. the additional task performed is setting threshold values and sending notifications.

### B. Smart Meter Gateway

In this project the system consists of three units which is human communicate units, central processing unit and which is gateway. Mainly in this case the button is pressed to release the tempering occur along with the meter. It may function 8051 using embedded c. The gateway is developed by using html and create database using sql. It may transfer the reading of data from 6lowpan network communication to control IEEE using WIFI. Gsm power meter is installed to every customer and send sms for every signal unit in first week of month

### C. Smart Energy Meter for Billing Alert

Mainly in this project the traditional energy meter is attached with microcontroller to scan the reading at certain period. The data is processed by server automatically and generate the meter reading .

The processor of Arduino is to separate the code and data. Whereas code is used the flash memory to store with the help of at mega 328. The module of the user may registered and login by there personal id then open the browser of application and it can be trace by officer. It is used to store the data value is maintain by central server. The reading of the energy meter is update once it is crossed over the threshold time and it can determine the system will be wrong.



#### *D. Research Smart Meter Over Smart Grid*

This paper says abt the smart meter may automatically billing process done using digital meters while the meter is installed it will keep constant reading about the usage of energy of the customer. The meter may also used to monitor and record the energy usage by digital means. The cryptographic technology in existing system of security which is used to comprising of the reading in smart meter. Uncertainty conditions is used to handle use of decision making, stochastic it can develop by the means of novel framework.

#### *E. Prepaid Energy Meter With Home Automation*

This paper presents about the energy meter with home automation of the bill is required to pay in the prepaid system by online processing. According to the microcontroller it decrement the amount and increment the consumed units may stop the counting .Bluetooth module is slave and master module. It set slave module as default it is to initiate the connection to other Bluetooth devices.

#### *F. Android Based Smart Energy Meter*

This system perceive the quality of used power. The energy meters started to check the query current and voltage of the energy meter. Once it is proved the it will send to micro controlled it is already calculate by using power factor. Finally it will display the reading of the smart energy meter .otherwise it is failed and has to process again and again

#### *G. Intelligence For Future Energy Systems*

It explains the comphresive of electric smart meter and focused the utilized of metering process. It include the capturing device to communicate the gateway and establish to secure energy smart meter. Energy meter allows customers to review their own electric usage to separate application which may reduce energy cost. The meter connect to the individual transformer to aggregate by combining homes .without any discrimination the data of the smart meter can be reused.

#### *H. GSM Technology Based Smart Meter*

.Reading of the meter data which is done automatically is known as automatic meter reading (AMR). The energy meter using Bluetooth is used to communicate the reading in wireless on low power consumption. The provider may visit each and every house which take the photos of meter readings. Alternative methods the customer who do not upload the photo of meter readings the may leads to irregular of bill generation. The embedded assembly language and execution is done by interface with PCM for sending and receiving the SMS

### **III. CONCLUSION**

Smart energy meter is one of the best devices in the world. Smart energy meter may automatically note the reading in digital meter. It may not need any help from human. It may avoid the wastage of time.

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