176_Smart Energy Meter

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Smart Energy Meter

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***Abstract*— This proposed system presents an objective about Energy Meter Monitoring and Billing. This project allows the user with a detailed analysis of power consumption by them, thus giving them an idea on how to conserve energy and thereby reduce consumption and cost. The project is dependent upon Internet of Things (IOT). It is also fruitful to the energy provider as they are getting a detailed viewing of the energy consumption of the commercial sector as well as the residential spaces. The consumer is provided with a mobile application using which he/she can analyze the bill consumption. The consumer can analyze the energy variables using an android phone; this structure can provide energy savings in homes and offices. Applications for this system include workspace, office cubicles, residential areas, power plants. The system will help providing a faster recovery at the times of disaster, accurate readings and better consumer services.**

Keywords*— *Energy-meter, energy consumption, energy theft.

I. INTRODUCTION

The current day system of energy monitoring as well as bill generation in India makes uses electromechanical and to some extent with the aid of digital technology is more likely susceptible to errors and it consumes more power and labor. The conventional methods of using electromechanical meters are now being taken over by digital ones for more efficiency for readings. The existing power sector of India is still unable to bill efficiently for the amount of energy supplied to the masses on account of frequent thefts and different losses prone in India. One of the prime reasons is the traditional billing system which is inaccurate so many times, slow, costly, and lack in flexibility and reliability[1].Meters of the past and in function today as well in various countries have poor accuracy and lack the ability to facilitate changes in configuration. Theft detection was also a challenge. With new developments in this sector, accurate and error free implementations are now taking new strides.

Electronics, office equipment amount to up to 15-20% of the total electricity consumed by both commercial and residential sectors. Majority of this expense is due to a lot of appliances that usually operate at low power but are not used much in the real world. The better way so as to avoid wastage of funds on energy consumption is to make use of a smart energy monitoring system that monitors energy consumption. This proves as a boon for billing purposes as well. The main objective of our proposed system is to establish a energy efficient power system at the government level itself to improve energy practices in the country, avoid unnecessary wastage of non-renewable resources. It would further help in boosting the economy and also help in improving the energy blueprint for our country.

With an increased pressure to cut down consumption and improve sustainability, smart energy meter monitoring devices needs to be developed so as to address the following challenges.

Traditional methods that are being used for energy monitoring in India includes the use of human operators who visit places to manually note down the meter readings. As these human operators have to visit each houses and manually collect the readings the bill can be used only after that which requires a lot of manpower. The process of energy meter monitoring can be affected under the following circumstances :

1. If the operator by mistakenly notes down a wrong reading.
2. The meter readings can be affected by bad weather conditions.
3. Meter readings are also affected if they have been by tampered by the consumer so as to reduce the bill amount
4. If the consumer is not in attendance than the operator has to visit the place gain.

With an increase in globalization there is an increase in the number of residential and commercial areas which means that more man power will be required to cover a larger area. The cost associated with the meter reading process is also imposed on the user. Along with power theft issues and energy consumption exceeding with every passing year, it is necessary to maintain effective utilization of the available energy resources by monitoring the consumption pattern.

The main objective of the proposed system is to develop a smart energy meter is not only to measure the consumer's power consumption in KWH but also to enable and support real consumption in rupees according to consumer tariff, so meter reader does not possess the need to visit each customer for the consumed data collection and to

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