IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 8, Issue 8, August 2020

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

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International Journal of Innovative Research in Computer and Communication Engineering

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|| Volume 8, Issue 8, August 2020 ||

IOT Based Electricity Management System

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ABSTRACT : The existing conventional metering system does not have a bi-directional communication mechanism to send the meter readings to electric power software for real time billing purposes and also unable to control the non-technical losses occurring at consumer premises. Hence, the electricity smart meters have been introduced in different countries to transfer the meter reading automatically and control the non-technical losses at the power distribution site. Furthermore, by the implementation of electricity smart meters on feeders, transformers and distribution ends, a better online system has been incorporated in the existing infrastructure of electricity. In addition, huge number of prepaid smart meters has been adopted to develop bidirectional communication mechanism between smart meters and electric power software's. Moreover, the installation of prepaid smart meters is used as a tool to manage the non-technical losses at feeder level. The electrical energy is one of the main sources of energy, which is used in almost every field of socio-economic sector. So we introduce this kind of smart electric meter which can cut off the flow of electricity after the recharge will be expired.

KEYWORDS: Energy Recharge System, IOT Internet of Things, Electricity Management System. Electric meter.

I. INTRODUCTION

In some of the places, there is no energy meters in houses, some of the people may use power illegally as a result, the electricity board will lose revenue. Now, the Government of India has passed the mandatory rule that the energy meter must install at each house to read consumed units and paid the bill monthly. Now the electricity billing is two types, one is pre-paid and second one is post-paid mostly postpaid billing process is done. India is advancing towards the path of the digital smart country. Now most of the populations in India are the smart users, they use online methods of shopping, billing and payments. With the increasing necessity for modern equipment's and a lavish lifestyle of the people, the demand for electricity has increased. This has also been a great issue in the society. With the rapid developments in the Wireless communication technology by the use of integrated circuits, it has become a trend to integrate automatic systems via wireless applications over network. The traditional manual Meter Reading is not suitable for longer operating purposes required human intervention thereby increasing their efforts and also material resources. These techniques also require huge manpower. Most of the energy meters are designed to bill as per the units of energy consumed. These meters need to be manually read by people in order to provide monthly/quarterly bills. We here propose a prepaid energy billing meter. The system is designed to allow amount of energy to be used as long as the account has balance pending. It also allows the operator to recharge the user account using message transmission. The system first accepts account recharge and allows to use only limited units of energy as per recharge and then cuts off the supply. Now for benefits, the electricity department we proposed the pre- paid electricity billing process that is to pay the bill before the usage of electricity power.

II. RELATED WORK

The traditional manual Meter Reading is not suitable for longer operating purposes required human intervention thereby increasing their efforts and also material resources. These techniques also require huge manpower. In this a new embedded technology based approach for automated energy meter reading system is proposed which enables the meter readings to be updated onto the centralized server on a regular interval basis. This approach is also concerned about detecting and controlling the energy meter from power theft and solves it by remotely by disconnecting the service (line) of a particular consumer.

In this system first user goes to portal and creates and account and apply for connection. After that there will be authority who checks customer documents and all details and if customer is eligible they give connection. In hardware part there will be device with raspberry pi, electric meter, relay circuit, LDR sensor, camera this system is placed on customer site. It can directly communicate with server in real time. When user recharges it will calculate how much

amount of unit user can consume. And when user exceeds this limit it cut the flow of electricity. This system also has notification system to remind user about recharge. And electricity board members can also monitor user device and status through their dashboard.

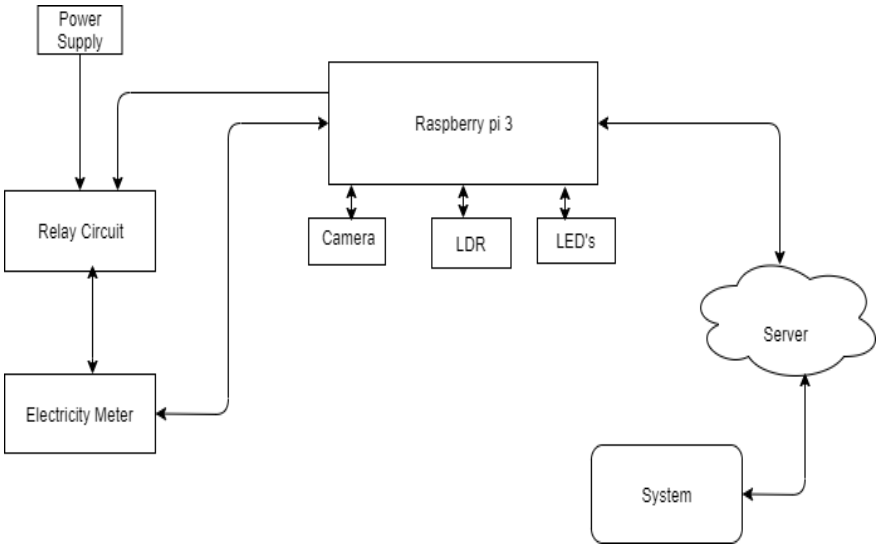

Fig1 System design

III. PROPOSED ALGORITHM

In this system the end user will see their account balance, how much unit electricity they consumed. And also this system has a device which is connected to the meter which reads the reading and send to server. Same device will cut the flow of electricity when balance is over. And user will get alert if their balance is low. The new user can also apply for connection and this connection request are send to the authorities. Authorities will able to monitor all the user status. The device which is connected to users meter is also have a camera so that authorities will see any intervention done with device or electric meter. The electricity smart meters record much more detailed energy consumption information than conventional electricity meters. In addition, the smart meters provide more facilities to consumers and electric power companies, such as, to reducing the meter reading cost, electricity losses management, fast response to consumer power demand, besides having same limitations

Pseudo code

Step 1: Start the system.
Step 2: Apply for new connection.
Step 3: Upload all required documents with their respective dashboard.
if (all documents are original)
Approve connection
else
Reject application and reapply.
end
Step 4: Recharge as per electricity amount.
If(recharge amount= dead amount of electricity)
Cut the electricity flow
Else
Electricity supply continue.
Step 5: Check the current status of account details.
Step 6: Get details as per request.
Step 7: End.

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IV. SIMULATION RESULTS

The system is concatenation of software and Hardware based system which can help the providers and consumers. The providers will get automatic meter reading which will help in billing of the system and the reading will also be saved to the server. We are developing software which will be very easy to use for anyone. Thus we are giving user accessible login account to the users where they can check their last readings and can also check their current status of the recharge. System can provide the alert message to the customer.

V. CONCLUSION AND FUTURE WORK

In this Paper we conclude that , The Prepaid smart metering system is the next generation of conventional electricity metering system which proposed the advance payment method through scratch balance card, web application for un-interrupted electric power supply to commercial, industrial and residential consumers. Many countries have replaced the conventional metering system by smart prepaid electricity meters and obtained some remarkable results against the theft activities and illegal usage of electric power. Furthermore, the prepaid smart meter is not a suitable solution for the developing and under-developing countries, where the countries are beyond the deployment of advance technologies, due to socio-economic growth and the low living standard of maximum population. Furthermore, the advance payment of electricity bills is also has a question mark for the poor population. India is advancing towards the path of the digital smart country. Now most of the populations in India are the smart users, they use online methods of shopping, billing and payments. With the increasing necessity for modern equipment's and a lavish lifestyle of the people, the demand for electricity has increased. This has also been a great issue in the society. With the rapid developments in the Wireless communication technology by the use of integrated circuits, it has become a trend to integrate automatic systems via wireless applications over network. The traditional manual Meter Reading is not suitable for longer operating purposes required human intervention thereby increasing their efforts and also material resources. These techniques also require huge manpower. Now for benefits, the electricity department we proposed the pre- paid electricity billing process that is to pay the bill before the usage of electricity power.

REFERENCES

1. Centralized Electricity Billing and Monitoring System with Power Theft Control. Author: Sumana Achar, Muntazir Ahmed. International Journal for Research in Applied Science & Engineering Technology (IJRASET), Volume 6 Issue V, May 2018.
2. IOT based smart electricity meter and billing system. Author: Amruta Chore, Prasad Mali. International Research Journal of Engineering and Technology (IRJET), Volume: 05 Issue: 10 | Oct 2018
3. Electronic Meter Reader & Data Base Management System. Author: Noman Mehmood, Zain Anwar Ali. Department of Electronic Engineering Sir Syed University of Engineering & Technology Karachi, Pakistan
4. Arduino and GSM Based Smart Energy Meter for Advanced Metering and Billing System. Author: Md. Masudur Rahman, Noor-E-Jannat. 2nd Int'l Conf. on Electrical Engineering and Information & Communication Technology (ICEEICT) 2015 Jahangimagar University, Dhaka-I 342, Bangladesh, 21-23 May 2015

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SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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