

ADVANCED SMART ENERGY METER

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College : *Karavali Institute of Technology, Mangaluru*
Branch : *Department of Electronics and Communication Engineering*
Guide(s) : *Mr. Arunraj Jathanna*
Student(S) : *Mr. Adheep Arya G R*
Mr. Charan Krashnamoorti Naik
Ms. Kanchana Radder
Mr. Karthik Kotari

Introduction:

With the rapid developments in the Wireless communication technology by the use of microcontrollers, there are many improvements in automating various industrial aspects for reducing manual efforts. The traditional manual meter reading was not suitable for longer operating purposes as it spends much human and material resource. It brings additional problems in calculation of readings and billing manually. Now-a-days the number of electricity consumers is increasing in great extent. It became a hard task in handling and maintaining the power as per the growing requirements. Presently maintenance of the power is also an important task as the human operator goes to the consumer's house and produces the bill as per the meter reading. If the consumer is not available, the billing process will be pending and human operator again needs to revisit. Going to each and every consumer's house and generating the bill is a laborious task and requires lot of time. It becomes very difficult especially in rainy season. If any consumer did not pay the bill, the operator needs to go to their houses to disconnect the power supply. These processes are time consuming and difficult to handle. Moreover, the manual operator cannot find the unauthorized connections or malpractices carried out by the consumer to reduce or stop the meter reading/power supply. The human error can open an opportunity for corruption done by the human meter reader. So, the problem which arises in the billing system can become inaccurate and inefficient.

The digital implementation caused the rapid utilization of devices such as computers and telecommunication devices. Communication media like the internet, GSM networks, Zigbee exists everywhere. SEM puts more control into the hands of consumers by giving them more detailed information about power consumption. That information is sent to the base station regularly using Zigbee and in case of power theft an SMS is sent to local operator from base station using GSM. As there is no human intervention in the entire process, there is no chance of human error and corruption.

Problem Statement:

The current system of electricity billing is error level and also time consuming. Errors introduced at every stage are due to electro-mechanical meters, human errors while noting down the meter reading, errors while processing the paid bills and the due bills. Smart energy meter is a technique which can reduce the problems associated with billing and also reduces the deployment of manpower for taking meter readings. It has many

advantages from both suppliers as well as consumer's point. This paper is also intended to present an overview of prepaid energy meter, which can control the usage of electricity on consumer side to avoid wastage of power and is a concept to minimize the electricity theft. As the billing process is done automatically in the proposed system it mainly reduces the manpower. A. Problem Statement the Electricity Board have got used to the manual process and they go along with it even though there are many concerns associated with it. Because of the human errors after getting faulty bill, it is problem of user to get it corrected from the energy supply board. In that case customer has to visit the office, stand in a queue and get it corrected. The problem is just because of human intervention. To avoid human intervention in the billing process, in this new generation, an automatic reading meter system came into use.

Objectives:

The major task of this project can be summarized as following:

1. To collect and feed the meter readings whenever server requires.
2. To obtain the real time usage of the electricity by consumers.
3. To generate an electricity usage bill.
4. To turn-off and turn-on, the mains, when consumers not paid bill properly.

Methodology:

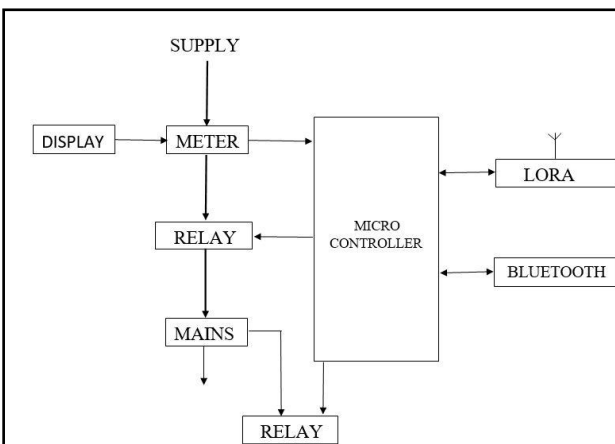


Fig: 1 Block diagram for MU

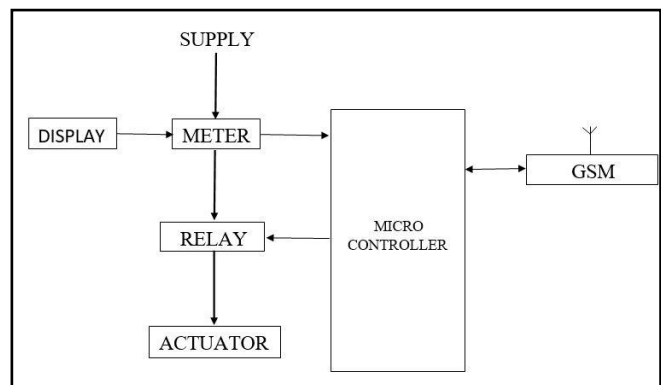


Fig: 2 Block diagram for TMU



Fig: 3 Block diagram for LCU

Conclusion:

The progress in technology about electrical distribution network is a non-stop process. In the present work wireless meter reading system is designed to continuously monitor the meter reading and to shut down the power supply remotely whenever the consumer fails to pay the bill. It avoids the human intervention, provides efficient meter reading, avoids the billing error and reduces the maintenance cost. It displays the corresponding information on LCD for user notification. The advantages of SEM are it requires less manpower, there is no need to chase payments, power theft detection is possible, bill is sent to the consumer with due date, the meter can act as either prepaid or post-paid meter, can minimize the power consumption in a house.

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