Prepaid Energy Meter

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Abstract: The 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 GSM.

**Index Terms:** Smart Meter, Prepaid Energy Meter, Arduino, GSM.

I. INTRODUCTION

Electric energy meters, the direct billing interface between utilities and consumers for long, have undergone several advancements in the last decade. The conventional electromechanical meters are being replaced by new electronic meters to improve accuracy in meter reading. Still, the Indian power sector faces a serious problem of lean revenue collection for the actual electric energy supplied owing to energy thefts and network losses. One of the prime reasons is the traditional billing system which is inaccurate many times, slow, costly, and lack in flexibility as well as reliability (Devidas et al, 2010). Therefore, attempts are being made to automate the billing systems. Even though more accurate and faster meter readings have seen the light of day, bill payment is still based on an old procedure. They require an individual/agent to personally come down to customer place and note the meter readings and report the amount one has to pay to the household/office. But the demand for computing power at all levels of electronic systems is driving advancements in semiconductor chip technology. The AMR and power quality monitoring systems manufacturers are taking advantage of these advances and integrating them into new meters and instruments. The networking technologies are driven by the demand for interconnection of computer users worldwide (Chandler, 2005). The AMR and power monitoring systems are using these advances to expand the monitoring systems.

A. DEFINITION

Basically like in a mobile phone recharging, the consumer buys a recharge card and gets some energy units in return or the balance amount. The balance amount will keep reducing for every unit of energy consumed and once zero, the power supply would be automatically cut off. The amount deducted for every unit of energy consumed can be ontrolled by the distribution unit according to the peak hours.

ARCHITECTURE
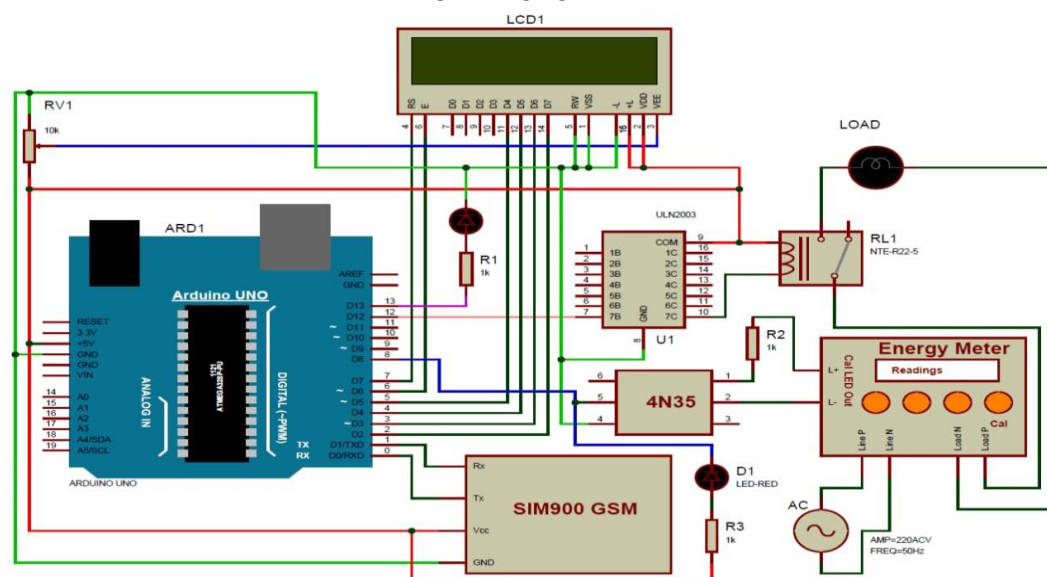
B.   PROBLEM

Recovering Electricity Dues From :
- Rural Areas.
- Apartment blocks.
- Commercial complex.
- Government departments.
- Electricity theft.
- Complicated billing process.
- Wastage of Energy.

C.   SOLUTION

The prepayment meter allows you to budget and stay in control of your utility consumption and prevent unexpected bills Prepayment meter can monitor and report real time data to track energy consumption for precise billing.these device can acsess and report critical imformation , alerts via buzzer , sms or by displaying it.

II.   OBJECTIVES

- It will help to reduce the consumption of energy.
- To reduce the cost of man power .
- Timely paid bills and less theft in electricity.
- No fault in meter reading and accurate calculations.
- It will help in to charge electrical vehicles in public stations .

III.REASEARCH METHODOLGY

We started our research from collecting and analyzing data from the resources and putting it together to build our project .Our prepaid meter consist of a arduino chip which will measure and calculate all of the units, gsm module for communication purpose, relays that will control/cut off the Connection from the circuit. And optocoupler which will extract the pulse from analog meter. Then we searched for some already built projects of prepaid meter

IV.SCOPE OF THE PROJECT

These meters can be used as prepaid energy meter by modifying them .our scope is to advance the technologies and making the prepaid meter system more efficient. this could also be used advance natural gas and water consumption.

V.BENEFITS

1) No unpaid bills because the energy is prepaid.

2) This manpower of utility can be put for some further value added jobs like vigilance ,etc.
3) Because no bills are sent , incorrect billing as a result of inaccurate meter reading is no longer a problem.
4) The prepayment system will naturally remove the need for the utility to get involved with the unpleasant and often difficult task of disconnecting errant customers.

VI. CONCLUSION

We are going to develop a smart prepaid meter using arduino, when user purchases the units the data is been sent to the Arduino through our gsm module, it will be one time money investment as it will feel costly when purchased but after usage it will be more effective in saving money and energy.it will also reduce the cost of labour which was needed to click pictures of meter readings and wiremans needed to cut off the unpaid supply, hence it will result in saving lots of money for MSEB.

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