**1. INTRODUCTION**

Energy meter is the heart of the today’s transmission system. The transmission without energy meter can become a dead one .Here we present an accessory to extent the energy meter to a new dimension. Energy meters in India have dominantly been electromechanical in nature but are gradually replaced by more sophisticated and more accurate digital and electronic meters. A high percentage of electricity revenue is lost by power theft, incorrect meter reading, billing and reluctance of consumers to pay bill on time. These all problems can be reduced by using centralized energy meters. This energy meter saves consumed energy in an input file at particular intervals and it is send to the server. Server takes the data transferred from the meter as well as from the supplier.

In this system the user has to purchase a recharge card and the card number along with the consumer number is send to 55444.This is collected and processed by the server. If the request is valid, a recharge is made. This system consists of single phase digital energy meter and a microcontroller 8051. It counts the pulses from the optocoupler and consumption is calculated using these pulses .The internal counter of microcontroller is utilized for this purpose. Server monitors energy consumption and corresponding reduction is made on balance amount. This energy meter does not have any rotating parts. A relay system has been used which either isolates or establishes the connection between the electrical load and energy meter through the supply mains depending upon the balance amount.

**2. EXISTING SYSTEM**

The present system of energy metering as well as billing in India uses electromechanical and electronic energy meters. They are error prone and consume more time and labour. 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 revenue collection for the actual electric energy supplied owing to energy thefts and network losses.

Traditional billing system is inaccurate, slow, costly, and lack in flexibility as well as in reliability. Theft detection was also a challenge. Recent developments in this direction seem to provide opportunities in implementing energy efficient metering technologies that are more precise, accurate and error free.

Errors get introduced at every stage of billing such as errors due to electro-mechanical meters, human errors while noting down the meter reading and processing the bills. There is no provision to know the consumer's maximum demand, usage details and power theft in real time. The remedy for this drawback is centralized energy meter. Pay first and then use it.

**3. PROPOSED SYSTEM**

Our project consist of AT89C51 microcontroller, 16X2 LCD, ARM1176JZF-S 700 MHz processor, buzzer, sensors, network module, flash memory .AT89C51 is the heart of the project .It is used to count the pulses from energy meter and to set the alarm whenever the balance is low, over usage of energy during peak hours etc. 16X2 LCD is provided to display the current balance, usages and tariffs. ARM1176JZF-S 700 MHz processor , network modules, flash memory etc are used to process , store and send the data .To recharge , consumer have to send message with the recharge code along with consumer number , similar to mobile prepaid recharge. The message is collected by the server and recharge is made.

The present power usage reading is made manually by moving to the consumer locations. This requires large number of labor operators and long working hours to accomplish the task. Manual billing is sometimes restricted and delayed by bad weather conditions. The printed billing also has the tendency of getting lost. Over the last few years, Prepaid Energy Meter has been proposed as an innovative solution aimed at facilitating affordability and reducing the cost of utilities. This mechanism, essentially, requires the users to pay for the electricity before its consumption. In this way, consumers hold credit and then use the electricity until the credit is exhausted. If the available credit is exhausted then the electricity supply is cutoff by a relay. Readings made by human operator are prone to errors. This project addresses the above mentioned problems. The development of GPRS infrastructure in past two decades made meter reading system wireless.

The GPRS infrastructure, which has national wide coverage, can be used to request and retrieve power consumption notification over individual houses

and flats. Apart from making readings using GPRS communication, billing system is needed to be made prepaid to avoid unnecessary usage of power. The use of Prepaid Energy meter is still controversial. On the one hand, those that support the diffusion of prepaid meters claim that they benefit both consumers and utilities because they help users to consume more efficiently and to improve the management of their budget, while allowing firms to reduce financial costs.

In order to recharge the user has to purchase a recharge card, similar to mobile recharge and the card number along with the consumer number is send to 55444.This message is collected by sms gateway of the server. it is then processed by the server and check whether the recharge card number is valid . If the request is valid, a recharge is made. This system consists of single phase digital energy meter and a microcontroller 8051. It counts the pulses from the optocoupler and consumption is calculated using these pulses. The internal counter of microcontroller is utilized to count the pulses. Server monitors energy consumption and corresponding reduction is made on balance amount. A tariff change request is initiated by the server, when a change in tariff is made. Relay system has been used which either isolates or establishes the connection between the electrical load and energy meter through the supply mains depending upon the balance amount. If the balance amount is low, an alarm will be triggered and disconnects when balance reaches zero .The electricity is automatically reconnected after the recharge.