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# Automatic Electric Meter Reading Using WIFI

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**Abstract -** *:- The automatic reading of energy meter is just like internet connection. It represent the time of value with respect digitalize world and overcome the man efforts from energy board is coming to taking the reading of our energy meter to make billing of energy consume for specific month but some time there is some reason like there is one in home, meter is placed in the house and dogs beware etc. Because of this all reason the reading of energy meter and thus the board send average meter reading and consumer will pay the maximum energy bills.so that to avoid all this things we making this project and automatic way to collects the bill and send to MSEB board and also show to consumer. To pay the bills at particular period time. The Automatic Energy Meter would result in being consumer friendly as it would take care of all the issues the consumer is likely to energy saving, reduced maintenance cost, increased safety without compromise on security and comfort, complete control of energy board and also it helps to avoid the robbery of energy from meter.*

***Key Words***: **WIFI, PIC Microcontroller, CT, LCD**

## 1. INTRODUCTION

The Automatic Energy Meter is to remote monitoring and control of the Domestic Energy Meter. It enables the Electricity Department to read the meter readings regularly without the person visiting each house. Reading can be achieved by the use of microcontroller unit that continuously monitoring and records the Energy Meter in its permanent memory location. The Microcontroller based system continuously records the readings and the live meter reading can be send to the Electricity department on request. This system also can be used to disconnect the power supply to the house in case of non-payment of electricity bills. In our project we interface meter to PC which stores all the data and calculates exact billing amount and send it to MSEB server by using WIFI. The exact billing reading will further shows on LCD, if the consumer not pay the bill within a time periods, the Microcontroller will automatically disconnect the power supply of consumer within a 10 days. In addition to this are going to reduces the power theft due to hooking and unauthorized consumption.

## 2. LITERATURE REVIEW

Existing meter reading technique in India are analyzed and conducted an extensive study on different energy measuring instrument available now. In existing system either an electronic energy meter or an electro-mechanical meter is fixed in the premise for measuring the usage. The kWh units used then still have to be process by a meter reading company. For processing the meter reading, company needs to firstly link each recorded power usage datum to an account owed by means of the specific traffic in use. Wireless electric power management and control system for short distance is developed using WIFI Technique. The microcontroller is used to manage energy data and WIFI tenable communication between the energy meter and data centers. The secure mobile agent concept was presented instead of one person for one meter according to geographic area energy meters can be organized. For one location energy meter a security manager can do his work. Local mobile agent can do his duty for a specific location to avoid the visits of external mobile agent to energy meter directly. After exceeding the maximum demand, the meter and hence the connection will automatically be disconnected by an embedded system inserted in the meter itself. The major disadvantages of a postpaid system is that there is no control of usage from the consumer's side. There is lot of wastages of power. Since the supply of power is limited, as a responding citizen, there is a need to use electricity in a improved and efficient way. Additional advantages of the prepaid system is that the human errors made reading meters and processing bills can be reduces to a great amount. Wireless meter can be used in residential apartment and especially in industrial consumer where bulk energy is consumed. Advance in technology have made exchange of information in very high speed, protected and truthful. Advance in wireless technology caused rapid change in field of telecommunication system. Communication system like internet and WIFI are available in India.

## 3. METHODOLOGY

**POWER SUPPLY**:- It is used to give a constant power supply of 5v to all the electronic circuits. In this we are using a step down transformer with rectifier diode, filter capacitor and regulator IC which convert a 12V DC to constant 5V

irrespective of any functions in input voltage between 6V to 12V.

**PIC MICROCONTROLLER**:-We used a PIC microcontroller to execute the number of operation. It is 8 bit microcontroller having 32 KB FLASH ROM, 2KB of EEPROM, and 1.2KB of RAM. It has 28 pins, out of then 25 pins are useable as digital input/output as well as all the pins have various function like ACD, COMPARATOR, TIMER, etc.

**MAX232**:- It is used to interface a microcontroller with the RF modem. This communicates the micro and RF modem with RS232 protocol also it protect both the devices against either side faults. This also help to increase the communication distance between both the devices.

**DRIVER** :- As microcontroller is not capable to drives a high voltages devices like fan and light directly, hence we used a relays to switch ON/OFF the devices, but microcontroller gives max. 5V/ 20mA. At its port output and the relay used is of 12V, hence driver IC converts the 5V signals to 12V.

**LCD DISPLAY**:- It is used to display the number of units consumed, total amount of bill, number of days remain to pay the bill.

## 4. BLOCK DIAGRAM

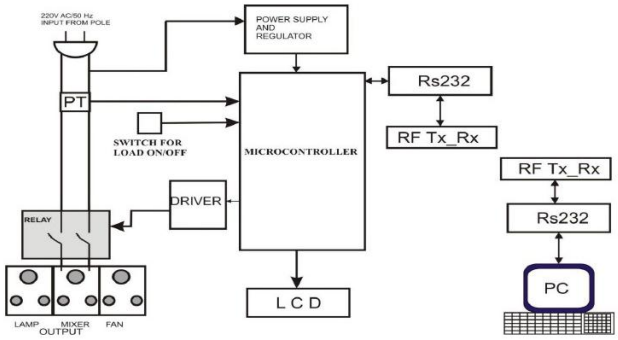


**Fig -1**: Block Diagram of AEMRW

## 5. CIRCUIT DIAGRAM

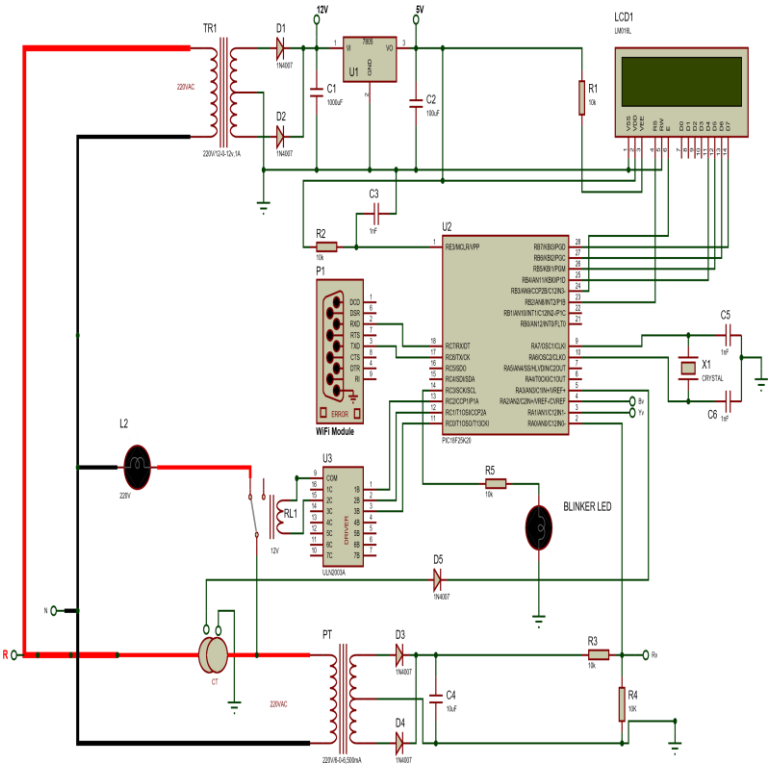


**Fig -2**: Circuit Diagram of AEMRW

## 6. WORKING

This is the block diagram of our project a 220V AC power supply is taken from MSEB main power line. Then this AC supply is 220V is applied to PT. Now PT is used to convert a 220 AC volt into the 5V and is used to convert a 220AC volt into 5V AC, then it will convert into 5V DC by using rectifiers. Because the microcontroller is only work on 5V DC current that why we need to convert. The 220V AC current. Now microcontroller calculate a number of consume per second and calculate with standard rate of value which is feed by MSCB office. The calculation part is depend upon the power=VI/1000 W/ 3600 sec this Formula calculate the average value of electricity consumer in second with standard value/rate. Then RS232 is language transistor who's translator between the microcontroller and radio frequency transmitter. It is also a protocol which helps to send data from a transmitter and receiver. Then the data will be send by RF to MSEB main board to checking the data and for authorizes work. Then at receiver side of MSEB/ Mahavitran. Then customer will pay bills via internet or manually counter it's depends on consumer choice. Now, if this above scenario is in true condition Means at particular time the bills will be pay then the MSEB office doesn't send any command. If this condition is false the main board office

send the command to micro- controller via reveres process that is PC- RS232-RF transmitter – RF receiver-RS 232 microcontroller that bills is not pay by consumer you will be the power supply of consumer. Now the driver is converted a +5V into +12V supply for relay to operate the high power application that is relay and also helps to provide the command to cut off the power supply. Then the relay is work to ON and OFF the total current which is given by transformer and cut the Power supply.

The following are the results obtained.

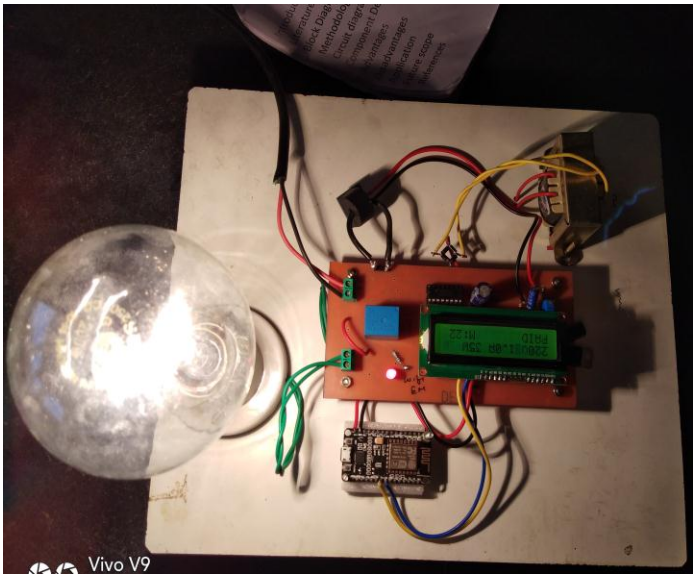


**Chart -1**: Actual Project


**Chart -2**:Volt,Ampear, Watt show in Lcd Display

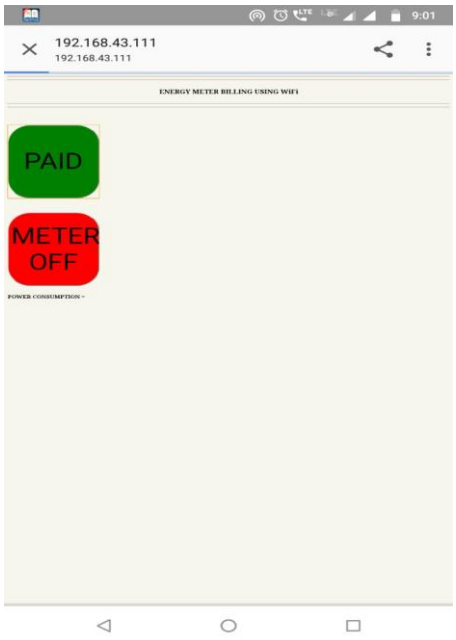


**Chart -3**:Paid or Meter Off options and also show the meter reading on Web Page

## 7. CONCLUSIONS

Hence we conclude that the system we design is taking a automatic meter reading for a useable energy for a specific period/ month and also send to Mahavitran by using WIFI and shows the total unit of consumed energy on LCD to pay the bill in period of 10 days from bills data. And gives a perfect month bills to pay the billing amount without any delay. This whole project saves a lots of times and initial cost and taxes from consumer. And it also saves the paper for printing bills

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