GSM Based Electricity Cut off System for Residential Area

Fenil Patel¹, Febin Babu², Purvesh Tandel³, Biraja Prasad Das⁴
¹,² UG Student, ³,⁴ Lecturer, Laxmi Institute of Technology, Gujarat, India

Abstract-- At the present time, along with the expansion of the Internet, automation becomes a very attractive thesis to debate. This paper discusses the growth of automation system for suburban electricity cut off using network based embedded controller. Nowadays, an assortment type of device for home residential electricity works powerlessly on human to control signals to reset the state of input. Based on this circumstances, it becomes an extrinsic enthusiasm to develop an automated system for suburban electricity device. The system consists of an embedded device to control power supply main switch and modernize the data into data centre. The users able to view updated power burning up as well as billing information in the donor web services. Cut-off caveat message is send to users via short message services. The system helps the electricity donor to reduce the operation cost as the system could cut off electricity automatically when the usage limit is exceeded.

Keywords: Arduino, GSM module, Energy meter, LCD, relay, Load

I. INTRODUCTION

Electricity is single of the power needed that empowers almost all machines nearby us. At the suburban level, it helps responsibility of their every duties easily. The marital user silent can use the electricity if the bill is silent not paid for the times of yore first month. Our previous technology was, if payment is made later than 30 days after the bill date. If and merely is the user have not pay the bill more than three month, the technician will come to house to cut the electricity manually. We called Automation of suburban Electricity Cut Off Using Network Based Embedded Controller. During this system, it will aware user if and only if the user attain the border of the electricity habit they have billed. Once the user exceeds the limit of electricity usage with the unpaid bills, the admin have the authority to cut-off the electricity supply. In this project we are making switch off the electricity those are not paying bill and also the reading will calculate automatically in the system and send to the consumers.

Our motto is, the engineer will cut the line from the office itself of those house who are not paying their bills on time. This will be very safe than an engineer comes to any location to cut the line those who have not paid the bill.

One of the most challenge face by the project is thefting the electricity from the line. Now a days we can see that in villages most of the people stole electricity from the line itself. To overcome this solution there are some methods
1. Keep the line 11 KV and step down it to 230 V and give to the society
2. Keep detecting sensor on all the poles and give number to the poles if anybody theft electricity the sensor should detect and command should give to the electricity board

II. LITERATURE SURVEY

In [1], The technology of e-metering (Electronic Metering) has gone through quick technological advancements and there is increased demand for a reliable and resourceful Automatic Meter Reading (AMR) system. This document present the plan of a easy low rate wireless GSM energy meter and its linked web crossing point, for automate billing and running the composed statistics worldwide. The future system replaces time-honored meter analysis methods and enable far-off entrée of offered energy meter by the energy contributor. Also they can examine the meter readings habitually without the person visiting each house. A GSM based wireless message unit disintegrated with electronic energy meter of each creature to have remote entrée over the usage of electricity. A computer with a GSM handset at the other last part, which contains the record acts as the billing point. Live meter reading from the GSM enabled energy meter is sent back to this billing tip rarely and these facts are updated in a central record. With proper confirmation, user can entrée the developed web page details from anywhere in the world. The total monthly procedure and due bill is messaged back to the buyer following giving out these data.

In [2], Electricity is distinct of the energy needed that empowers almost all machines nearby us. At the suburban level, it helps mothers doing their every day duties, brood studying awkwardly with aircond and fathers doing their works proficiently. While at the saleable level, it empower enormous infrastructure of computer machine that keep the program administration and manage of everything from the tiny stuff to the mammoth buildings. If for several cause present was no electrical energy in the world, confusion and disaster would right away take hold.
The electricity meter is unmonitored. The marital user tranquil be able to employ the electricity if the statement is unmoving not paid for the past first month. Our previous technology was, if sum is made later than 30 days after the bill date. If and just is the customer have not case out the bill more than three month, the technician will come to house to cut the electricity manually. We call mechanization of suburban Electricity Cut Off Using Network Based Embedded Controller. During this system, it will attentive customer if and only if the customer reach the limit of the electricity usage they have owed. Once the consumer exceed the border of electrical energy tradition by way of the not paid bills, the direction have the ability to cut-off the power supply. In this project we are making switch off the electricity those are not paying bill.

In[3],In overload of 40 countries have implement prepaid meters in their markets. In United Kingdom the system, has been in use for well over 70 years with about 3.5 million clients. Over the previous little existence, Prepaid Energy Meter has been planned as an inventive way out meant at facilitate affordability and dipping the cost of utilities. This mechanism, basically, requires the users to pay for the electricity before its utilization. In this way, consumers hold thanks and then use the power awaiting the credit is bushed. If the existing credit is worn out then the supply of electricity is cut off by a relay. Secondly, In the up to date era of technology we came to know about various wireless control system for our appliance or machines. Automatic meter reading, or AMR, is the technology of routinely collecting utilization, analytical, and grade data from water meter or energy metering devices (gas, electric) and transfer that data to a central file for billing, troubleshooting, and analyze. This knowledge largely save usefulness provider the cost of broken up trip to each bodily site to read a meter.

One more gain is that billing can be based on near real-time utilization rather than on estimates based on past or predicted utilization. This fitting in rank connected with study can help together usefulness providers and customers better control the use and production of electric energy, gas habit, or water use. The AMR system is also able to provide a set of poles apart services, which are useful for the utility companies in their operation and planning and maintenance; they are load management, outage and fault reporting, patron services, power quality monitoring, network management, theft detection, billing, balance settling, energy settling, asset organization, energy usage information, stoppage coverage etc

In[4],There are certain losses which concern the cutback of the control system. In India the proportion of power losses has been relatively high. The most high-flying form of non-technical losses in India are electricity theft and default of bills. This is great loss for rule. It is likely that power robbery and nonpayment of bills cost in our country is in billions a year. The goal of this study job is here a design of Prepaid Metering System by using PLC (Programmable Logic Controller) and SCADA (Supervisory Control and Data achievement). In the proposed Automatic meter reading (AMR) system, the post paid energy meters are replace by digital energy meters. All meters can be monitor online on national SCADA. As the whole future system is prepaid and the customer have to pay previous to by the electrical energy. If the quantity falls underneath sure smallest amount amount, then a message will be sent to the consumer on the mobile phone. This system not only reduces the labor cost but also increase meter reading accuracy and save hugs amount of time.
III. METHODOLOGY

**BLOCK DIAGRAM**

The supply is given from AC source to energy meter. In between energy meter and arduino step down transformer is kept because the arduino consume only 5 volt and energy meter is also connected to relay. In arduino is programmed that to cut off the electricity of particular house and also programmed that the reading of energy meter will automatically come to your mobile phone.

**ARDUINO**
Arduino is an open-source display place old for construction electronics project. Arduino consists of both a forcibly programmable route get on and a part of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

The Arduino display place has develop into fairly well-liked with people now initial out by means of electronics, and for high-quality reason. Different most preceding programmable circuit boards, the Arduino does not require a break up part of hardware in arrange to weight original system on to the board – you be able to just use a USB cable. As well, the Arduino IDE uses a easy edition of C++, making it easier to learn to program. In conclusion, Arduino provides a typical form issue that breaks out the function of the micro-controller into a more easily reach package.

**GSM MODULE**

This is a GSM/GPRS-compatible Quad-band cell phone, which works on a frequency of 850/900/1800/1900MHz and which can be used not only to way in the Internet, but also for spoken communication and for SMSs. Externally, it look similar to a large cover with L-shaped associates on four sides so that they can exist soldered both on the side and at the bottom. Internally, the unit is manage by an AMR926EJ-S processor, which controls phone message, data message and (through an UART and a TTL serial interface) the communication with the circuit interfaced with the Mobile phone itself. The PC is too in charge of a SIM card (3 or 1.8 V) which wants to be shut to the superficial wall of the unit.

**IV. CONCLUSION**

The main goal of this project is to provide more efficiency and safety. The archetype suits in all climatic condition. It doesn't require more power to operate. It is smaller in dimension and consume low power and will give low cost. It will be time consuming process as it will avoid personal hamper. This reduces the man power and also good protection. The electricity theft will also reduce by adding some additional system.

- Keep the line 11 KV and step down it to 230 V and give to the society
- Keep detecting sensor on all the poles and give number to the poles if anybody theft electricity the sensor should detect and command should give to the electricity board

**Result:**

@light on #
REFERENCES

[1] "GSM Based energy meter reading system with remote cut-off system" Pallavi Roy Kaustav Kaushik, Pritam Singh, Manash Pratim Baishya, Debraj Sarmah of Girijananda Chowdhury Institute of Management and Technology, Guwahati India

[2] "Automation of Residential Electricity Cut off Using Network Based Embedded Controller", Nazri Bin Abdullah, Siti Salwani Yaacob, Bana Handaga, Yuszaime Yaacob Faculty of Computer Science and Information Technology University Tun Hussein Onn Malaysia

Senior Technician Tenaga Nasional Berhad, Klang.
