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Theft Identification System Design for the Electricity Using Global System Module

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ABSTRACT - Electrical energy is very important for day to daylife .wherever the Electricity isneeded more; the power theft is also increased. Electricity theft, which is arises due to population and also wastage of power. The usage of power is more in industries compare to houses. Objective of this project is to design a system in order to avoid the inconvenience for the users from theft bill by using GSM module. In this system the GSM MODEM is used for detect the theft while it's happen. The sensor is used to sense where will be the theft occur. The sensing information is intimated to the consumer office through the sensors in the form of message signal or a voice message. So the illegal power usage of power consumption can be avoided. The load sharing is as method, used to share the electricity power for all the users in a particular area. The load sharing circuit is connected to each and every pole in the transmission line. It can receive the incoming power from the load and it delivers the power to the consumer for their need. If any drastic change in the power usage, the Real Time Clock (RTC) is used to gives the information about the usage of additional power usage. So it is help to detect the theft when and where it happens. The entire system is for detect and avoid the illegal usage of power. In order to integrate the various systems together we must first properly understand the working of the entire system. A brief study is alone on the components and the technology which we are going to use in our project.

KEYWORDS: Electricity theft, GSM MODEM, Sensors,Load sharing application.

1. INTRODUCTION

Electricity theft takes place in a different form, with the support of people from different parts of life. It is needed to be protected for sufficient power delivery to the consumer because electricity is necessary fordomestic and industrial activity.Powerwastageis one of the typical reason for the power theft,why because certain amount of power is wasted then the necessity of electricity leads to more.The illegal usage tends to some defects also.Not only in the headline cables but also in the underground cables the power is theft.

To overcome this GSM technology is used. By using GSM MODEM theft is prevented while it happens. GSM specification supports the longest distance in practical use of around 35kilometers.GSM Circuit is connected between the Transformer and Distributor.

2. RELATED WORK

The related work compared with

[1].S.Amin,G.A.Schwartz, the problemof Electricity theft detection is formulated as a game between the electricity thief and electric utility. These methods may present a low cost and reasonable, though not optimal, solution for reducing energy theft. [2].J.Nagi,K.S.Yap,the average daily consumptions of customers over a two-year period were calculated and the long term trend in energy consumption was used to detect fraudulent customers.[3].S.Depuru,L.Wang,SupportVectorMachine(SVM) was used to approximate the consumption pattern of customers based on 96 readings of smart meters in AMI for each day. The classifier was trained using historical data of normal and theft samples. [4] H.G.Rodney, this paper presents ofdesign and development of Automatic meter reading(AMR) system. AMR system is a boom for remotemonitoring and control domestic energy meter.[5] M.V.Ramesh,this design incorporates effective solutions for problems faced by India's electricity distribution system such as power theft and transmission line fault.[6] ZHOU Wei, electricity-stealing prevention became a big problem to the electricity board. Which is based on some kind of electricity-stealing and actual demandof power is by prevention of stealing electricity, realizes the behavior of electricity-stealing with remote monitoring system. [7] , SVM was used to approximate the consumption

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pattern of customers based on96 readings of smart meters in AMI for each day. The classifier was trained using historical data of normal and theft samples. New samples were classified based on some rules as well as the SVM results. In [8], a neural network model was incorporated to estimate SVM parameters in order to reduce the training time of the classifier, and a data encoding method. [8] was proposed to improve the efficiency and speed of the classifier. Their method, however, is only effective in detecting energy theft attacks that result in zero usage reports, since in one step of the encoding procedure the metering data is converted into binary values. Therefore, the proposed classification Technique cannot detect a wide range of attack types. [9], an improved encoding technique was proposed and both SVM and a rule engine-based algorithm were applied on encoded data to improve the classification accuracy. Portion so the algorithms were parallelized to reduce the detection time. Still the algorithm suffers from the common short comings of classification-based methods as we described in detail. The database used for performance evaluation is not publicly available and the authors did not explain howthey obtained theft samples for all customers or what percentagesof the training and testing data were theft patterns. Onthe other hand, in this paper we focus on addressing problemsassociated with classification-based techniques such as imbalanceddata, contamination attacks and dynamic property ofconsumption patterns to improve the detection accuracy. Wealso argue that detection time might not be as crucial as otherfactors like FPR or implementation cost of the ETDS.

3. PROPOSED METHOD

In this, electricity board supplies the amount of power which is measured by the EB meter. Theft is happen in transmission lines are monitored by Signal Conditioning Unit(SCU) & also electric signals are converted into control signals. It is passing through PIC microcontroller. Real Time Clock(RTC) gives the information about power level is abruptly changing. Relay is act as a switch. Wheneverthe power level across the peak, then it disable the connection. GSM detects theft signal & the information is passing to EB consumer office via voice signal.

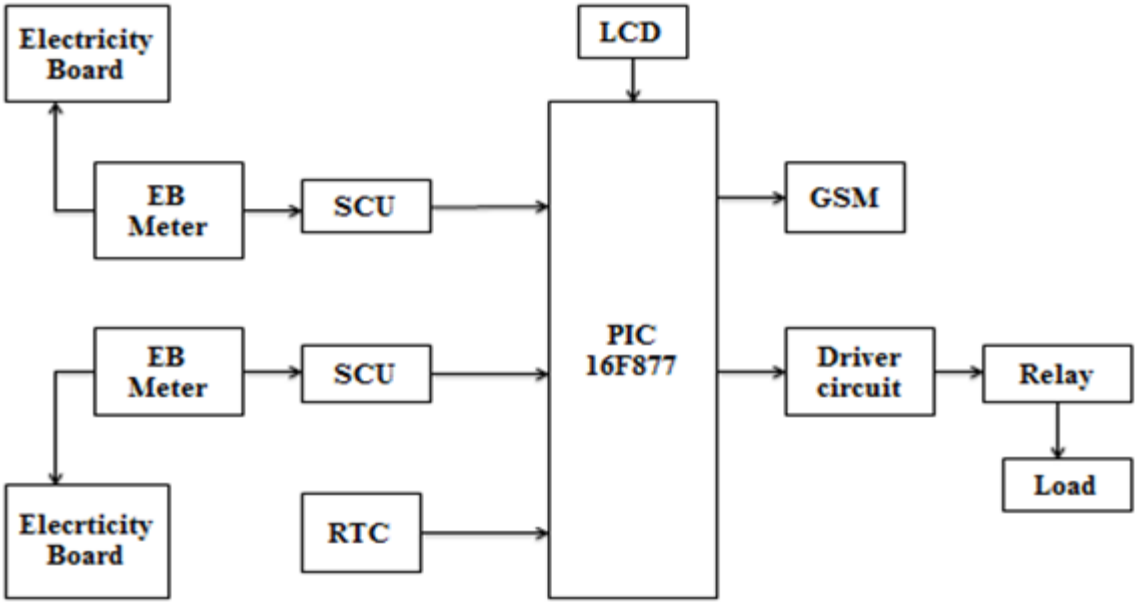

Fig: Block diagram of theft detection system.

EB Meter

It is a Power Measurement device. That measures the amount of electric energy consumed by electrically powered device. It has two parts Transducer -converts the power in to electrical energy. Counter-display the readings. Electric current passed through meter, the disk rotates to measure the exact amount of kilowatts-hour used.

GSM MODEM

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A GSM modem is a type of modem which accepts a SIM card, and operates over a subscription to mobile operator, just like a mobile phone. From the mobile operator specification, a GSM modem looks just like a mobile phone.It acts as asthe sensing circuit. If theft is detected it will send the information via voice signal to EB consumer office. Then the power supply is terminated by using Relay.

RELAY

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are doublethrow (changeover) switches. A relay allowsone circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetically and mechanically connected. Here Relay is act as a switch,whenever the power level across the peak or theft occurs it disables the connection. Then the sensor detects and passes the information to the GSM Modem.

PIC 16F877

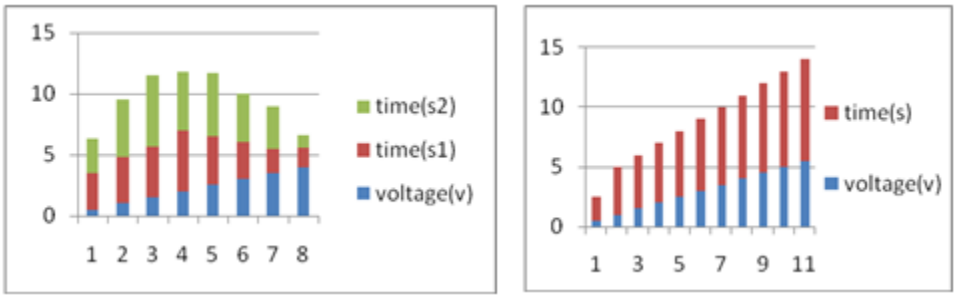
Peripheral interface controller (PIC) is a family of modified Harvard architecture microcontroller made by microchip technology. It is a 16 bit controller.It consists of high performance & low cost. The architecture of this controller is RISC. In this system it receives the control signals from SCU. It also regulates the power from RTC and also the regulated readings are displayed by Liquid Crystal Display (LCD). Both the data are controlled by PIC.

SCU

It is abbreviated as signal conditioning unit. It is used to manipulating the analog signal which is used in analog to digital converter.In our field it is common to have a sensor. It is used to make the sensor output stable for processing after conditioning. The electrical signals are converted into control signals and it is passed through PIC.

4. EXPERIMENTALRESULT

The experimental result shows that the comparison between the overall usage of power and the illegal usage of power. Where the normal usage of power is increased depends on the given load. While theft occurs, the value of a load must be a change depends on the usage of power.



CONCLUSION

This system reducesthe manual work for theft detection using GSM. The voice signal is used to convey the information about theft. To resolve the problem the government govern some techniques that yet to be implemented. Load sharing application is an important feature that we are implementing in this project. It is also a key to reduce a illegal usage of power.In future work, depends on the user, usage of power is limited to everyone. So the illegal consumption of power will be terminated. And also we are trying to save the power.

REFERENCES

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[1].S.Amin, G.Schwartz and H. Tembine", incentives and security in electricity distribution networks" in decision and game theory for security. Berlin, Germany:Spinger-verlag,2012.

[2].J.Nagi , K. S. Yap, K. Sieh, S. Ahmed, and M. Mohamad,"Non technical loss detection for metered customers in power utility using support vector machines," IEEE Trans. Power Del., Apr. 2010.

[3]. A. A. Cardenas, S. Amin, G. Schwartz, R. Dong, and S. Sastry , "A game theory model for electricity theft detection and privacy-aware control in AMI systems," in Proc. IEEE Allerton Conf. Commun. Control Comput., Monticello, IL, USA, 2012.

[4]. H.G. Rodney, this paper presents of design and development of Automatic meter reading(AMR) system. AMR system is a boom for remote monitoring and control domestic energy meter.

[5]. M.V. Ramesh, This design incorporates effective solutions for problems faced by India's electricity distribution system such as power theft and transmission line fault.

[6]. ZHOU Wei, ZHU Rui-de, WANG Jin-quan.GSMbasedmonitoring and control system againstelectricity stealing. Electric Power AutomationEquipment, 2004.

[7].S. Depuru, L. Wang, V. Devabhaktuni, and P. Nelapati, "A hybrid neuralnetwork model and encoding technique for enhanced classificationof energy consumption data," in Proc. IEEE Power Energy Soc. Gen.Meeting, San Diego, CA, USA, 2011, pp. 1–8.

[8]. S. Depuru, L. Wang, V. Devabhaktuni, and R. C. Green, "High performancecomputing fordetection of electricity theft," Int. J. Elect. PowerEnergy Syst., vol. 47, pp. 21–30, May 2013.

[9]. M. D. Martino, F. Decia, J. Molinelli, and A. Fernández, "Improvingelectric fraud detection using class imbalance strategies," in Proc.ICPRAM, vol. 2. Vilamoura, Portugal, 2012, pp. 135–141.

