NOVATEUR PUBLICATIONS
INTERNATIONAL JOURNAL OF INNOVATIONS IN ENGINEERING RESEARCH AND TECHNOLOGY [IJIERT]
ISSN: 2394-3696
VOLUME 7, ISSUE 3, Mar.-2020

GSM BASED ELECTRICITY POWER THEFT DETECTION

SHREYA CHOUGULE
Department of Electrical Engineering MSBTE Mumbai / V.V.P. Polytechnic, Solapur India
*shreyachougule11@gmail.com

MADHURI THITE
Department of Electrical Engineering MSBTE Mumbai / V.V.P. Polytechnic, Solapur India
* thitemadhuri3@gmail.com

AISHWRYA DALAVE
Department of Electrical Engineering MSBTE Mumbai / V.V.P. Polytechnic, Solapur India
* aishwaryadalave2001@gmail.com

RIJVANA NADAF
Department of Electrical Engineering MSBTE Mumbai / V.V.P. Polytechnic, Solapur India
* rijvananadaf786@gmail.com

KALYANI RANDIVE
Department of Electrical Engineering MSBTE Mumbai / V.V.P. Polytechnic, Solapur India
* kalyanirandiv2792001@gmail.com

SHUBHANGI MANJARE (B.E Electrical)
Department of Electrical Engineering MSBTE Mumbai / V.V.P. Polytechnic, Solapur India
*Shubhangi_manjare@yahoo.com

ABSTRACT
In This paper stole of electricity detection in residential, commercial and in industrial is presented for various types of power thefts. Now a day's Electrical energy is very essential and it is backbone for our industrial growth. In India demand of electric power is fastly growing and its generation is not sufficient as per requirement .power theft is also increasing and it is very big problem in power sector all over country. The title of this project is to design a system which will reduce electricity theft .this project reduces use of manpower and trait control the theft

INTRODUCTION

In our country Electrical power stole is daily problem. The population in our country large and hence demand and usage of electrical power is very high. Day by day the problems related with electric power stole is fastly growing in all over India. Already there is large gap between electricity demand and generation .because of electricity theft loss of electricity is increasing. Because of all these reasons we are facing the problems such as load shedding in both agricultural and public areas.

There are number of ways by using peoples can theft electricity and it is not possible to track, how theft has occurred. In this paper we proposed a system which detects theft of electricity. to expose the theft which is done by using most common method that is CT by passing the meter by using wire piece .consumers by passes energy meter by connecting wire previously and later energy meter . Our system is used in regular energy meter which is hidden and if any consumer try to attempt electricity theft, a SMS will be received by control unit of electricity board, we are using two CT. First is connected in post line's input side where second CT is connected at distribution point of consumer line. In this system PIC microcontroller converts analog input to digital output. PIC microcontroller gets input from output of CT values. Input current and same of output current are compared by PIC. If the result of this comparison is negative then this Limited post can be detect as theft point. Electricity board gets this related value on LCD Display by transmission. Microcontroller processes this information and through applying GSM Technology SMS Will be send to electricity board.

EXISTING SYSTEM

The wireless communication setup of energy meter including zigbee , relay control and GPRS is used in the existing system .To Secure the communication channel and zigbee the cryptographic method is used for data transmission in serial transmission .for this process we have to collect readings in particular area and cut power supply manually when it needed .

PROPOSED SYSTEM

In our system for transmission of meter reading to the customer and supplier ,GSM technology is used .IR sensor is used to control energy theft .power will automatically cuts according to request of authorized server mobile.

BLOCK DIAGRAM EXPLANATION

PIC 18F4520

For Automatic reading and theft control main part used is PIC 18F4520 this microcontroller based on low power 16 bit microcontroller. The main advantage of it low cost and high performance .this belongs to RISC architecture with internal 10 bit ADC .

BLOCK DIAGRAM

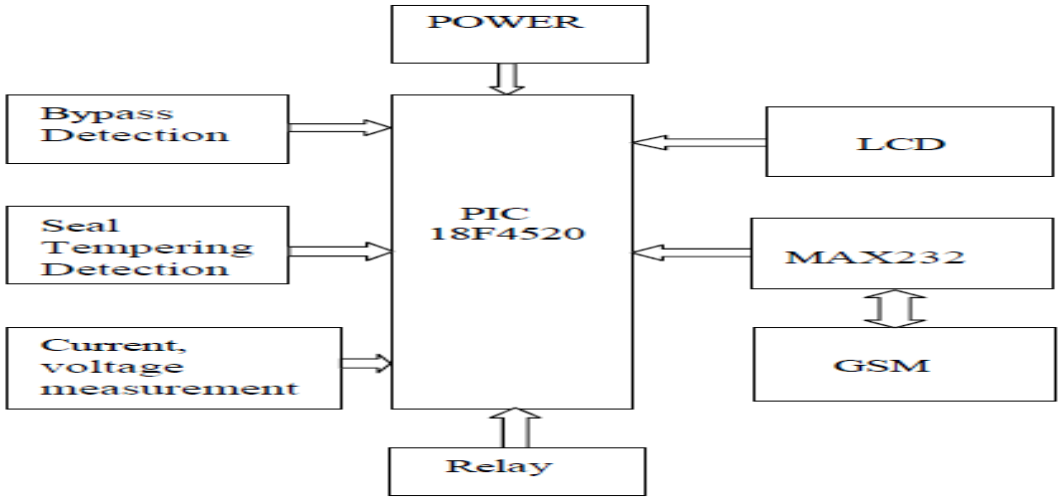


Fig.1: Block diagram of energy theft detection by using GSM

Power Supply

The Input is given by using regulated supply .The AC main supply 230 volt is step down by transformer 12 Volt. The output of rectifier is pulsating in nature .so to get pure DC output and filter is connected to remove AC components from output of rectifier. This output is given to voltage regulator to obtain constant DC Supply.

Seal Tempering Circuit

If anyone try to theft power from energy meter by removing seal on energy meter then IR sensor transmit the signals to PIC microcontroller then it will send SMS on mobile of substation controller by using GSM model.

Bypass Detection unit

If any customer uses power directly by providing tapping instead of connecting to energy meter it means that he is bypassing the connection through energy meter. This is one type of energy theft .In such cases our circuit will send SMS to controller of substation through GSM by using PIC controller and power supply will automatically cut by using relay .

Power measurement unit

In this unit for measurement of total current and measuring voltage CT is used. Diode bridge rectifier is used for converting AC to DC .to reduces this voltage up to measurable scale, voltage divider circuit is used.

GSM modem & MAX232 IC

GSM Modem –max 232 is built with dual band GSM engine –SMS 900A. As mention above if there is any power theft it will send SMS to microcontroller as per design program. The SMS will send to GSM through Max 232. If SMS will receive from authorized number then supply will automatically cuts OFF to the help of relay.

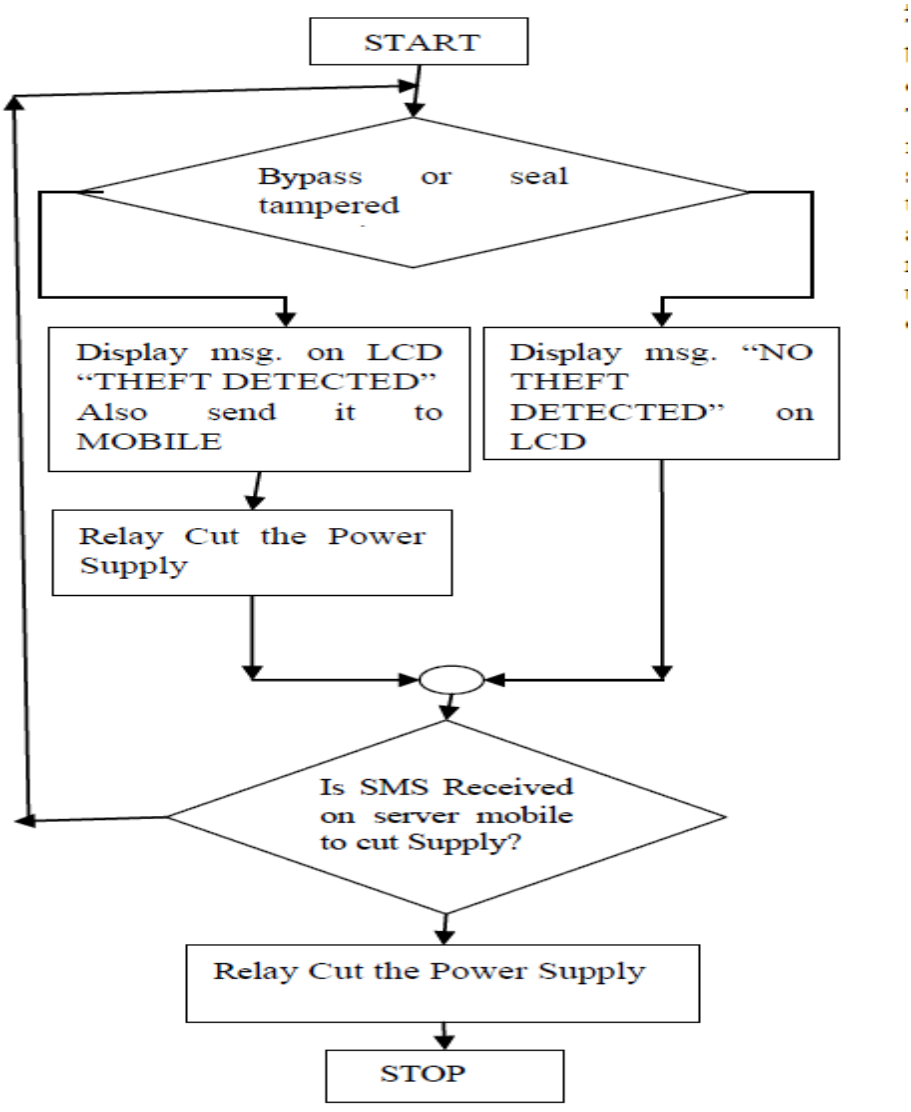
LCD display

Here 16 *2 LCD display is used. At normal condition that is no theft through energy meter then LCD will display value of voltage, current and power. If any theft occurs then it will display as a "THEFT IS DETECTED".

Hardware design

The design of hardware in our system in a way that system will automatically collect all readings and detects the theft. To measure total power consumption for residential, commercial or industrial purpose current transformer is used. All recorded readings are transmitted to electricity board by using GSM module .IR sensor is used to detect and control. It is fixed with the screw in the area of energy meter seal. If anyone trying to removing this screw from energy meter then SMS will be send to supplier. PIC microcontroller is used for measuring energy meter reading and monitoring IR sensor. The bypassing of meter is detected by using CT. Two CT's are used, one is placed in energy meter and another is used on electricity pole.

Flow chart



CONCLUSION

Our proposed system helps to reduce human efforts and also controls Energy theft. Use of GSM will provide number of advantages of wireless network. Metering IC gives accurate measurement of Power consumption.

REFERENCES

1) Siddarameswara H.N. "GSM based electricity theft identification in houses and in industry sector", ICEE-21st june 2014,ISBN-978-93-81693-6603-03.
2) P. Rakesh Malhotra et al. / IJET "automatic meter reading and theft control system by using GSM", 2013.
3) Abhinandan Jain, Dilip Kumar, Jyoti Kedia, "Design and Development of GSM based Energy Meter", in IJERT, 2012.
4) S. Arun; Dr, sidappa Naidu, "Design and implementation of automatic meter reading system using GSM, ZIGBEE through GPRS" in international journal of advanced research in computer science engineering,2012.
5) Bharath, P.; ananth, N.; Vijetha, S.; Prakash,K.V.J.; "Wireless automated digital energy meter". In sustainable energy technologies, ICSET 2008.
6) Abdollahi, A. Dehghani, M. Zamanzadeh,"SMS-based Reconfigurable automatic meter reading system" in control applications,2007.