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POWER THEFT IDENTIFICATION USING GSM Based

[1]Brij Mohan,[2]Baibhaw Aryan,

[12,]U.G. Student, Department of Electronics and Communication
IIMT College of Engineering, Knowledge Park 3, Greater Noida, UP India
brijmohanyou70@gmail.com ,roybaibhaw8@gmail.com

ABSTRACT

Electrical energy is very important for everyday life and spine for the industry. Electricity power is indiscipline to our daily life with increasing need of electricity, the energy robbery is also growing, electricity theft is a hassle that keeps to plague electricity region across the country, the goal of this paper is to design one of these gadget with a purpose to try and reduce the illegal use of power and also lessen the probabilities of theft. In this research we have focused on the most common practice of stealing power which is tapping or tampering the meter. The system has been designed to detect the theft and also inform to the nearest substation and to the consumer. This model try to achieve theft control.

Keywords-: Energy Meter, ESP32 Controller, GSM Model, Opto coupler.

INTRODUCTION

Electricity is the modern man's most convenient and useful form of energy without which the present social infrastructure would not be feasible. When significance of electricity is at the growing aspect, then the stealing of this energy or illegal intake of electricity from the transmission traces could be prevented. Electricity theft has come to be a incredible task to the energy board. Electricity theft is the most important hassle in recent days which causes lot of loss to electricity boards. In international locations like India, the conditions are greater often, if we can save those thefts we can store lot of power. Electricity theft detection system is used to discover an unauthorized tapping on distribution lines. Theft also may occur by rewiring circuits to avoid an electric meter, or by tapping into another customer's electrical lines. The proposed electricity theft detection system helps to detect the theft which includes tapping on the distribution lines using a piece of wire, which is counting the current units by placing a wire before and after the meter reading unit. Electricity theft has been focused all over the world, but power theft in India has a significant effect on the Indian economy. There are variety of power theft has been taking place with the support of people from different walks of life, utility staff, consumers, labour union leader, political leaders and high level utility officials.

LITERATURE REVIEW

Detection of power theft in every houses and inindustry for different methods of theft. A system is designed which will try to reduce the unlawful use of electricity and also lessen the probabilities of theft. Detect the theft and try to acquire theft manipulate[1]. Because of electric powered electricity theft, about 30-35 percent of the earnings earned through the electric board is going waste. Previous attempt to monitor the power theft has not resulted in well ordered manner because of the unlawful practices of some of the employs and consumers. This

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studies goals at reducing all these difficulties by fabricating a simple system to send a message whenever there is a power theft activity at a certain location. The electricity theft detection using microcontroller has been proposed. This system reduces the cost of man power for providing information regarding theft by consumer.

METHODOLOGY:

The proposed system describes how to prevent the Tampering of Meter and Bypassing the Meter. The principle gain of this device over the alternative systems proposed in advance is that the structures proposed formerly useful discover power theft but do no longer stop it. While this system prevents the theft which means if the defaulter attempts to theft the energy by way of bypassing or tampering, he will now not be capable of use the electricity. Consumer can only get right of entry to the power via proper energy meter.

Theft Control Measures: Protection against tampering In this system if the customers or professional ones try and open the energy meter and tamper it to expose low or no energy consumptions. To remove this trouble, one leaf switch is used at establishing aspect of the proposed energy meter. Output of switch is attached to outside interrupt pin of microcontroller. In everyday conditions, the transfer can be closed and the Microcontroller will discover 5V as its outside interrupt pin. If consumer attempts to open the energy meter the switch might be opened and the Microcontroller will detect 0V at its external interrupt pin. If this occurs, the microcontroller disconnects the electricity without delay and additionally sends this records to the electricity board and consumer with the assist of GSM modem.

Protection against tapping the meter In this proposed system to save you from tapping, modern transformers are used one after the other inside the distribution junction and sub junction. The output voltages of CT1 and CT2 are furnished to the ADC inputs of Microcontroller. If the distribution line energy is more and sub junction electricity is much less, then there might be difference among the output voltages of CT1 and CT2. The Microcontroller compares the voltages of CT1 and CT2 and if any considerable difference is observed, it disconnects the electricity immediately the usage of the Relay and additionally sends the information to the power board through gsm.

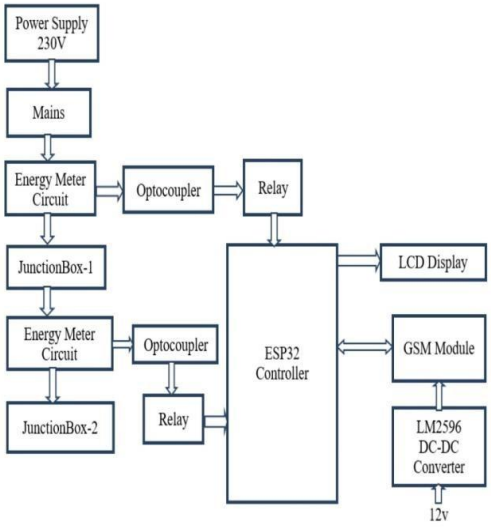

Fig 3.1: Block diagram of Power Theft Detection

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COMPONENTS USED:

A) Hardware		
No.	**Component**	**Quantity**
1.	Arduino Mega 2560	2
2.	Current Sensor	2
3.	Single Phase Energy Meter	2
4.	BTBee Explorer Regulated	1
5.	IO Expansion Shield	2
6.	Plug Top	1
7.	Light Bulb 60W	2
8.	Light Bulb 100W	1
9.	RF Module	2
10.	1-Way Switch	1
11.	Bluetooth Module	1
12.	MCB 32A	2
13.	16X2 Character LCD Module	2
14.	Bulb Holder	3
15.	4 – Ways Plastic Distribution Box	2
16.	PVC Junction Box	2

EXPERIMENTAL RESULTS

4.1 SYSTEM DESCRIPTION

The project model of power theft detection and meter monitoring by using Arduino GSM system is shown in figure 4.1.

Figure 4.1; project model of power theft detection and monitoring System.

CONCLUSION:

This project can capable of detecting the electricity theft in various industrial and consumer area by measuring power at load and station side.The implementation of this system will save large amount of electricity, and there by electricity will be available for more number of consumer then earlier, in highly populated country such as INDIA.

References

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