

SMART ENERGY METER THEFT DETECTION USING IOT

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Abstract :- In olden days the power theft is the one of the most problem in industries as well as domestic peoples Power theft detection and control system using internet of things present an efficient and less costly way to transfer the power consumed by the consumer wirelessly electrical power dishonesty is a serious problem faced by utilities. This wireless technology is used to overcome the theft of the electricity. Which can done by the using excess amount of power beyond the limit of the meter. This paper presents the development of cost effective of the electricity theft detection and prevention system using internet of things technology. The necessary data requirements for smart meter and distribution substation are defined in order to unlock the feature in distribution network and to the supply cut off from the customer. The unpaid the bill payment of the electricity. When intelligent energy meter has the new innovation from this meter from the load control. When the consumer has to be do not paid the electricity bill at the time the power supply will cut down from the particular customer of the supply will shut down from the following application. When application is send to the particular server the server will cut down from the supply. The hardware results validate through the simulation result by implemented by Arduino.

Key Words: Energy meter, IOT, pulse detector, Arduino Uno, Relay, LCD display.

1. INTRODUCTION

Power utilities lose a large amounts of money each year due to fraud of the electricity consumers. Electricity fraud can be defining as dishonest or illegal use of electricity equipment or service with the intention avoid to billing charges. It is difficult to the distance between honest and fraudulent customers. Realistically electrical utilities will never the be able to the eliminate the fraud. It is possible, however to take measures to detect, prevent and reduce the fraud. Technical losses of the electrical energy are caused due to the functional tendency of the equipment used from the generating station to the distributing station. Electricity theft is the one of the biggest problem damaging the power sector of Nigeria; it includes any activity done in order for the consumers of electricity to use electrical power without proper consent of the utility so as not to pay for the energy.

In distribution companies are often discouraged from installing electricity devices (electricity meters) at the consumers promises because when such devices are installed expansion of their business. For example if the generation companies expand the business it means that more power will be generated and supplied to the transmission company. At the end of the day there will be an increase the amount of power available for the consumer to use the electricity theft to the Netherland is commonly subject to an organized crime activity mostly connected with the cultivation of illegal drugs. The perpetrators are more sophisticated, organized and better skilled in the deployment of different camouflaging techniques which take the detection more complicated. The network losses are eliminated in the settlement process between the electricity traders and DNO. There are three components of total grid losses in the Netherlands.

According to numeric cases electricity theft mostly starts with the metering device as it is concealed inside the metering box the amount of electricity measured by the energy meter is determined by the product of the voltage and current and the power factor therefore the energy meter can be slowing down, stopped or even reverse changed the any one of the elements such as voltage and current.

DRAWBACKS OF REGULAR ENERGY METER:

- ❖ Highly depends on energy meter reading.
- ❖ Human error cannot be avoiding normal meter reading.
- ❖ Always there is no cross checking of human readers.
- ❖ Possibility to change the reading when taking photos of energy meter by using software tools.
- ❖ The consumer is not receiving updates of his regular usage of energy.
- ❖ The consumer may not receive his energy bill as per regular interval of the due date.

1. ARDUINO:

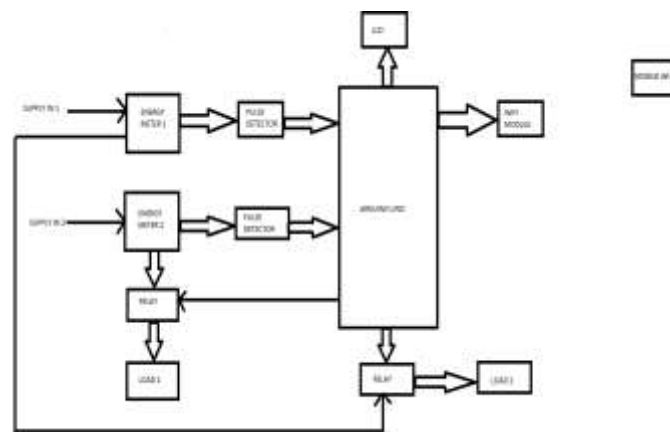
Arduino is the open source hardware and software company, project and user community that design and manufacture single board microcontroller and microcontrollers. Arduino board uses various types of processor the board features of serial communication interface including universal serial bus. The programming languages are C&C++.The initial Arduino core team consisted of following completion of the wiring platform lighter and less expensive Arduino is the only allowable the digital signal and clock signal and it should be processed the Arduino. It has following amount of pins are presented in the Arduino board the two pins are supply pin and ground pin the supply pin is +5v pin and connected to the Arduino. The Arduino will have processed the signal that should be monitored the clock signal.

1.2 ENERGY METER:

Energy meter is the one of the electrical device it should be recorded the energy usage and it should be recorded the daily usage of energy for individual customers in olden days the energy meter should be a disk type the disk type energy meter should be a the power is usage and the disk should be rotated and the value of power usage of the energy meter should be monitored and recorded in now a days the energy meter should be digital type in digital type energy meter should be usage of power in mw or kw it should be measured in a now a days energy meter in addition to that the energy meter should be a date and month and year should be displayed in an energy meter. The energy meter should be a various ratings different from industry and homes.

2. Hardware Setup

The working method of the proposed system when the electricity energy meter there are two energy meter when used to the comparison of paid customer and unpaid customer. This comparison is used to the proposed system. When there is two energy meter is used. When the two energy meter is connected on a relay when the relay is connected to an Arduino. Then the output of the Arduino is digital signal the output of the Arduino is connected to the wife-module. Led display will also have connected to the Arduino. Because any time the server will not be worked the Led display will also have displayed from the power theft and bill payment. The pulse detector will have used to the how much amount of pulse when flowing to the circuit the pulse should be detect the pulse detector.in mobile application from the Wi-Fi modules the sms will sent to the consumer mobile when the power usage is increase beyond limit(above 100 units) the alert will have sent to the customers and then when the consumer will unpaid the bill the supply will cut down from the server. If for example one consumer will pay the bill during the time period, the supply will not be cut down otherwise the command will have sent to the server the supply will cut off from the particular unpaid bill customer.



Hard ware setup

3. CONCLUSION

The power quality, power theft and unpaid bill are most prominent issue in the power system for a power quality. In this paper is proposed an intelligent energy meter is through the customer it is difficult control of an electrical energy in olden days the power utility bill paid from the particular time but now the electrical charges should be a do not paid from the particular time so in this project should be avoid the unpaid bills, and reduced the over voltages. when the over voltages is the important for a

power utility when the power quality to increase in this category will be used in efficient and comfortable one so this project is new innovation and used to the society when used properly.

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