



WIRELESS POWER THEFT MONITORING SYSTEM

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Abstract : Power larceny is the sizably voluminous quandary now days which causes immensely colossal loss to electricity boards. And to surmount these losses prices are incremented. So if we can obviate this larceny we can preserve lots of potency. The mundane practice for power larceny is to short input output terminals or to place magnet on the wheel in case of old meters. In this system a micro controller is interfaced with an energy metering circuit current sensing circuit, RF communication & a contactor to make or break power line. If current is drawing & energy pulses are mundane then no puissance is larceny. If current is drawing & energy pulses are not coming then it designates power larceny. So microcontroller trip the o/p utilizing relay. This information is sent to substation utilizing wireless communication. Line faults may be caused due to over current or earth fault. If there transpires to be a connection between two phase lines then over current fault occurs. Earth fault occurs due to the earthing of phase line through cross arm or any other way

Keywords- power theft, monitoring, earthing, fault.

I. INTRODUCTION

An electric meter is a device used for measuring the amount of electrical energy supplied to a commercial or residential building. Due to the increasing cost of electricity, security and tampering in electric meters has become a major concern for government agencies over the globe. Moreover in populous countries like China and India, tampering in electric meter and energy theft have become common. Electric meters can be manipulated, thus causing them to stop, even bypassing the meter. Consumers those who are tamper with electric meter, effectively and efficiently use power without paying for it. This theft or fraud can be dishonest as well as dangerous. Electric meter security is made as major issue in many countries today. Wireless Power Theft Monitoring Unit use remote monitoring method to prevent power theft. It is necessary to present this method to electricity department. This Unit also use Radio technology to monitor wireless meter reading. If there will be difference in wireless reading and installed meter reading, then it is easy to detect thief.

II. PROBLEM IDENTIFICATION

According to the Indian atmosphere, it is a great problem to blame any personality against the theft of power line from the power distribution system. this can only by overcome by an experienced method that the total load of distributed may be fixed and if any person may create any theft against this load the power may get off of the whole position which is been distributed so that the whole person living in that locality it is to be located they may refuse for power theft otherwise the employee cant able to blame any person against power theft. This system has been experienced in khurshipaar area placed in Chhattisgarh India where plenty of power theft is being occurred by the personality living in that locality this has been controlled through our control system and it has a better result on controlling and monitoring the theft against the personality in that area, then by Zigbee based RF transferring of signal to the substation and at the substation it is being received and monitored that the tripping function has been performed.

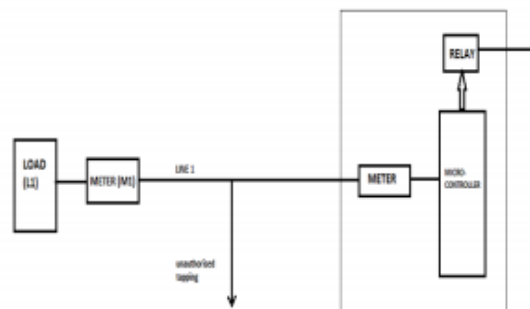
III. METHODOLOGY MODEL

According to block diagram the whole process is been describe in short block initially. The power sensing is done by power step down transformer, which convert 220v ac to 12v and a converter is added to convert the ac to dc. Two relays are operated one for power distribution and other relay to control the zigbee transmitter kit when the power system gets off the zigbee get start transmitting. Due to the battery backup for zigbee transistor kit is being provided very neatly. if the load protector is being connected through this process, any person may connect any extra line the trips the relay and the relay gets off, then zigbee start working at the substation and a receiver is connected with step down transformer and it is converted ac to dc convertor, then it is been feeded to 2 relays which operate and indicate the line of from the substation or the line off in particular area. This operation is done by led conversion. Red light for off indication and green light for on indication.

IV. WORKING

In the receiver, the receiving capacity of receiver is max 100 Hz and is adjusted and synchronizes with that of transmitter. The receiver has a tank oscillator which receive frequency from the transmitter. The tank oscillator is used to synchronize the transmitted frequency with that of oscillator. In the tank oscillator of receiver a Pf capacitor of 20 Pf receives the signal through variable inductor and variable capacitor 0.1 Pf capacitor works as a high pass filter and 0.1 microfarad capacitor works as a low pass filter. This is drive through oscillation between transistor through an RF transistor 2 & 222A. A feedback effect is given at the time with the help of R6 & C4 in order to get maximum output through the collector. This is then amplified negatively two times with the help of same RF driving transistor i.e. Q1 Q2. In Q2 the feedback effect is provided to emit max. Emission through emitter. A zener diode is added between two biasing to prevent the over voltage and over current. Finally, the limit of the transistor exceeds for further amplification, so a phase changing amplifier is added to amplify the signal positively. Finally, two times positively amplification is done by the same no. of transistor and it is converted to voltage through a voltage driving transistor. At last from the calculation, 6V voltage is produced. This 6V is finally added to the LED indication and to the buzzer. So the lamp will glow and buzzer will respond.

POWER THEFT DETECTION



Digital energy meter (M1) will measure a consumed power by load (L1) over a period. It will send a data in proportion with consumed power to receiver with the help of wireless digital data transmitter. Receiver on the pole system will receive a data sent by transmitter in a load side meter. Receiver will send it to microcontroller. Also energy meter on pole will measure power sent over line1 and provide appropriate data to microcontroller. Now microcontroller has two readings one is power calculated on pole itself and another is power consumed by load (L1). Suppose there is tapping done by any unauthorized person on the line to connect his appliance as shown in figure, over a certain period there will be difference between meter reading (M1) and pole based reading. Microcontroller will compare these two values and if the measured value on pole is more than value send by meter (M1) by some tolerance, then power theft is happening on line1. This theft signal generated on pole system can be transmitted to substation and rectified by power line communication technique or by wireless technique whichever is suitable an economical. Tolerance should be provided for losses of line. Because over a long period there will be difference in reading of meter on load side and pole side due to loss of line between pole and load. Therefore tolerance should be provided through programming of micro-controller.

V. CONCLUSION

This project concludes that after using this system one can simply monitor the load consumption by every consumer. And one can also control the power theft by this project

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