

# Energy Efficient Monitoring and Controlling Using PLCC

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**Abstract-**The world is now looking forward to develop technologies for power generation and efficient utilization at the same time. Most of the power received from thermal and hydro electric power plants. Besides that people completely depend on the wind energy, solar energy etc. This energy productions may vary based on the climatic conditions so the energy demand occurs. In order to overcome that government used to borrow current from the private sectors this may bring heavy loss to government. Recent statistic shows that power demand totally falls on the particular period of time. So the government cannot give the required current at that time so there occurs the shut down. The proposed systems make the users to use only particular amount of current at a certain period. Threshold range is set up by the electricity board based on the availability of current. The proposed system can monitor and control the individual power meters by PLCC technology. If the users exceed threshold range set by the electricity board, first it gives pre alert to the users from energy meter through Bluetooth, and then the relay set up in the system will automatically turn off the power supply. Instead of manual billing, automatic billing is done with the help of PLCC technology.

**Keywords-**PLCC, relay, energy meter

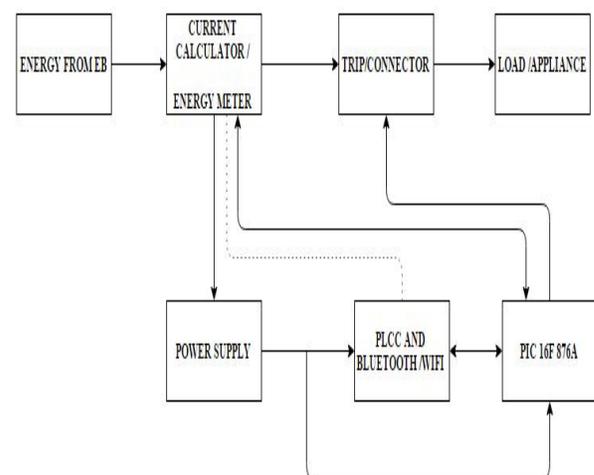
## I. INTRODUCTION

India is facing a power shortage of 90,000 MW which is due to increased demand in power. So power generation efficiency alone is not important to a country but efficient power consumption pattern as well. With the help of the proposed system, the threshold energy limit is set down at the demand period. This threshold range varies from place to place, time to time. So this threshold range is instantly set down by the authority with the help of PLCC technology. This PLCC technology is cheaper and easy to communicate on comparing with Bluetooth or Wi-Fi. Each power meters is provided with unique ID. With the help of this PLCC communicates with that specific power meters. If they exceed the threshold limit automatically they get alert from the system to their android mobile. This energy exceeding alert is transmitted via Bluetooth to the users mobile. After certain period, it will automatically shut down the power supply. The

relay will set back after ten minutes. In existing system, Energy monitoring system is done through Wi-Fi, GSM, and Zig-bee technologies. In which we need to install the Wi-Fi on the both receiver and transmitter end which is practically not possible. Monitoring from a long range is not possible in this technology. In proposed system, Energy usage and threshold limit exceeding alert is monitored in the user android mobile via Bluetooth technology.

## II. METHODOLOGY

### A. BLOCK DIAGRAM

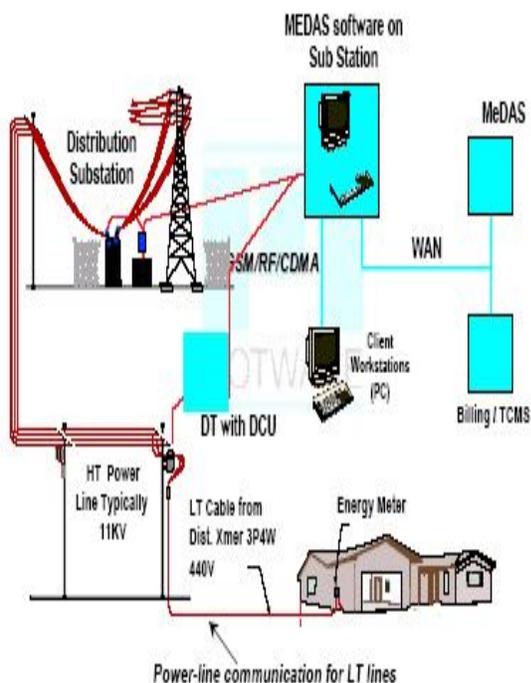


### B. PROJECT DESCRIPTION

In proposed system, Energy usage and threshold limit exceeding alert is monitored in the user android mobile via Bluetooth technology. The threshold limit and controlling of power meters is done using PLCC technology. Billing details is obtained by sending the billing request from the Electricity Board through PLCC. The energy level is set up by the Electric Board, transfers the information to the users. If users exceed the limit, first EB gives the pre alert to the users then cut off the power supply using relay for particular period of time. This system also prevents the theft of electricity. If someone tries to tamper the power meter it will automatically send the alert to the consult officer via PLCC.

### C. PLCC

Power Line Carrier Communication, is an approach to utilise the existing power lines for the transmission of information. The data collected from different sensors is transmitted on these power lines thereby also reducing the maintenance cost of additional wiring. This technology is now developed far better than that initial improvement promising a reliable utilization in home automation and security system. The principle of PLCC consists in superimposing a high frequency signal at low energy levels over the 50 Hz electric signal. This second signal is transmitted via the power infrastructure and can be received and decoded remotely. Thus the PLCC signal is received by any PLCC receiver on the same electrical network before the signal is treated.



Today the need for PLCC comes from ISPs that require an Ethernet link between the modem connected to the public network (could be cable TV, DSL, or FTTH) and the set-top box connected to the PCs, the IP phone, or the TV display. With the development of HDTV, this Ethernet link must deliver a high bit-rate stream that is stable with a high guarantee of service, and the latest flavors of PLCC seem to be able to achieve these requirements. In fact, the last technical developments in PLCC implement advanced OFDM and TDMA, with reserved time slots for each stream to guarantee good delivery of the IP packets in real-time--which is not built in with any of the PLCC standards.

### D. 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 most have double throw (changeover) switch contacts. Relays allow one circuit to switch a second circuit which can be completely separate from the first.

### E. LCD DISPLAY

LCD stands for liquid crystal; is a output device with a limited viewing angle. The choice of LCD as an output device was because of its cost of use and is better with alphabets when compared with 7-segment LED display. The application requires a LCD with 2 lines and 16 characters per line, this gets data from the display the same. It has 8 data lines, 3 control line, a supply Voltage Vcc (+5v and a GND). This make the whole device user friendly by showing the balance left in the card. This also shows the card that is currently being used.

### III. CONCLUSION

The world is now completely run by electricity. Electricity is one of essential thing in human life. So it is very important to save electricity. So this proposed system provide effective usage of electricity. Monitoring the power consumption and avoiding the wastage is the predominant factor of this proposed system. It is possible to install in every house and institutions. Even in the rural areas one can monitor the power consumption. Manual billing will be completely avoided through the proposed system. By implementing this system energy produced by the government sector will be equally distributed to avoid the power shutdown.

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