# Iot Based Smart Meter

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**Abstract –**Theft of electricity is the criminal practice of stealing electrical power. It is a crime and is punishable by fines and/or incarceration. It belongs to the non- technical losses. Electrical power theft detection and control system are used to detect the consumer when they try to use the power illegally. Electricity theft happens when the customer uses energy meter tampering such as placing a magnet near to energy meter, disconnecting the neutral line and shorting the phase coil of the current transformer. To identify and control power theft here an intelligent system is introduced. It consists of current sensors that are used to measure the actual load current and the other is to measure the turning back or neutral current. The microcontroller Arduino will be used to send the power signal to Wi-Fi. If the meter box is open the online message will display that meter tampering occurred. Hence the power vendor can easily identify the customer who is illegally consuming the power for that energy meters. Moreover, when there is an occurrence of theft the relay will disconnect the load from the supply.

**Keywords-***Microcontroller Adruino*

## I- INTRODUCTION

Over the previous years, electrical energy metering gadgets have experienced numerous enhancements and turned out to be more convoluted with more highlights and capacities. IoT enables devices that can communicate via the internet and IP based network with each other in the form of data collection to monitor. IoT based Smart Energy consumption monitoring is an internet- based device that measures the amount of power consumption. Nowadays, power consumption monitoring is a big issue in many areas. The drawback of the current meter reading system is that a person has to go area by area and he has to read the meter. Many times, errors like extra units or bill amount, or notification from the electric board even though the bills are paid are common errors. The idea is being proposed to reduce the human effort and error to collect the monthly reading and to minimize the problems regarding the billing process. The proposed solution for this issue by installing the energy monitoring system for every individual house / industry to monitor the consumption of power online.

Development of Arduino Based IoT Metering System for On-Demand Energy Monitoring , This research developed an IoT based smart metering system while analyzing its integration procedure. Using a Composite Design methodology, the work provided a simple and useful solution in the form of an energy consumption rate wireless meter. The system was shown to be successful in measuring current, power consumption and also processing the cost incurred by a customer. These metrics are communicating the energy consumption and cost to the cloud server. This makes it easier for customers to view consumption rate ubiquitously. A comparison with [18] revealed that the developed IoT smart metering satisfied these requirements viz: Quantitative measurement, control and calibration, communication (sending and receiving of data effectively); ability to receive upgrades from firmware, effective power management, display as well as timing synchronization. These are essential between the meter and the utility provider's system. In the work, Demand Side Management concept has been satisfactorily achieved. However, the present research currently does not cover concepts for the validation of the system specification roadmap as presented in [20]. Hence, future research will be carried out to investigate possibilities for an automated validation of the system

specification regarding the requirements for extending GSM wireless communication, with WiMax (4G LTE) and optic fiber for long distance communication. Also, introducing an open tampering technique in the IoT smart meter to monitor any form of tampering decreasing the load.Prepaid Electricity Meter with Theft Detection Applications

Home appliances
Home automation
Smart plugs and lights
Industrial wireless control
Baby monitors
IP cameras
Sensor networks
Wearable electronics
Wi-Fi location-aware devices
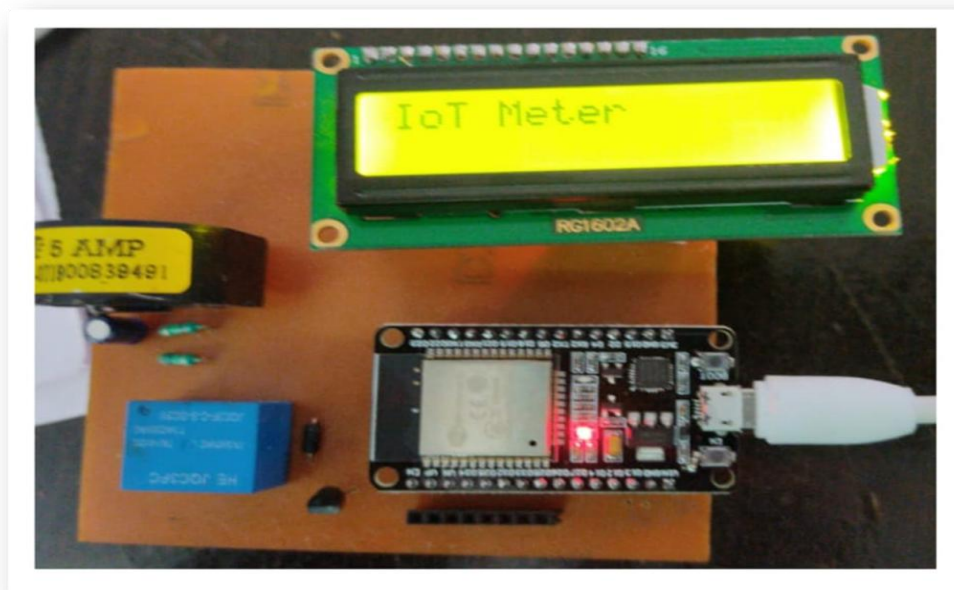Security ID tags
Wi-Fi position system beacons

**COMPONENTS USED**

ESP32
http protocol LCD
Battery CurrentSensor
Meter Tamper Switch Relay
Current Transformer

# BLOCK DIAGRAM
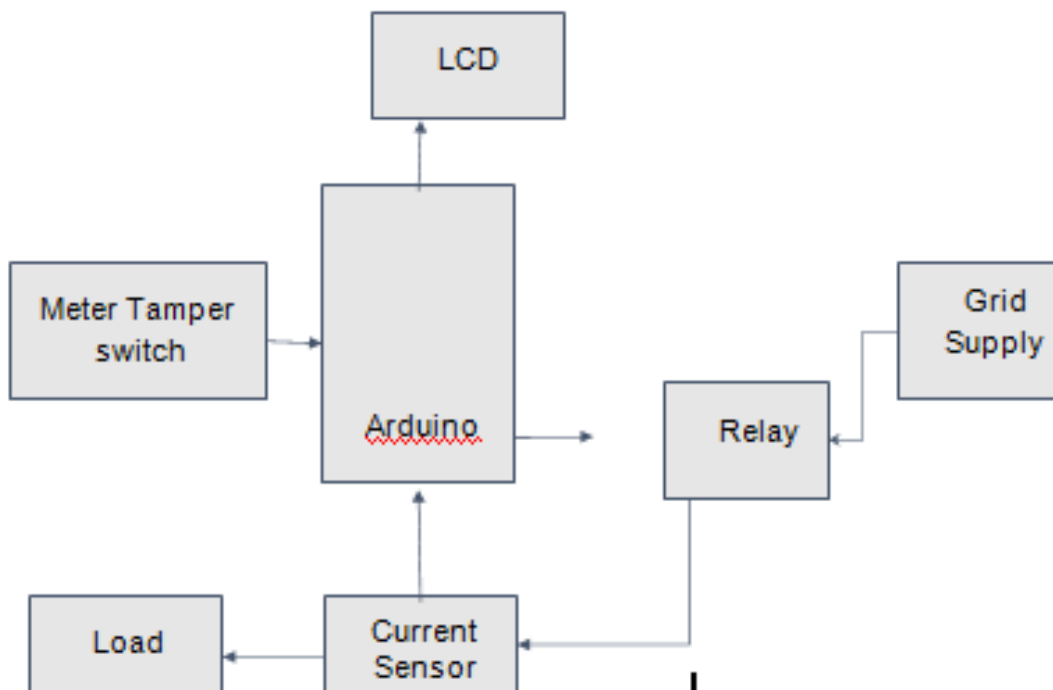


Actual Hardware

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