ARDUINO AND GSM BASED PREPAID ENERGY METER WITH THEFT ALERT

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ABSTRACT

The aim of paper is to propose a different method for measuring and billing of the energy consumed rather the conventional method as well as to minimize the queue at the electricity billing counters. In order to avoid waste of money in this system we have used GSM SMS based billing process. It is possible to recharge the electricity balance through this system just by sending an SMS. An earlier charging will undoubtedly get rid of the issues of unpaid bills and human mistakes in meter readings, along these lines guaranteeing justified income for the utility. Now a days power corporation face many problems such as power theft. Theft of electricity can be a increase the cost of electricity bill. This system will easily detect power theft. This system provides efficient meter reading, avoiding the billing error and reduces the maintenance cost.

INTRODUCTION

An electricity has become an essential necessity to human life. Its production and proper utilization is the backbone of the survival, socio-economic development and progress of a nation. Therefore, its distribution and management has top priority in government policies globally. In India, distribution losses are substantial from pilferage of distribution lines and connected equipment like energy meters, distribution boxes and various connectors. In a utility distribution system, electricity metering plays an important role, as it measures the electricity consumption of users and generates bill, which is a source of revenue. Electricity theft is one of the biggest problems damaging the power sector of India; it includes any activity done, in order for the consumers of electricity to use electric power without the proper consent of the utility so as not to pay for the energy. Presently electronics energy measurement is continuously replacing existing technology of electromechanical meters worldwide. A wireless digital

energy meter will definitely offer greater convenience to the meter reading task. Traditionally, the electricity meters are installed on consumer's premises and the consumption information is collected by meter-readers on their fortnightly or monthly visits to the premises.

SIGNIFICANCE AND SCOPE

- Meter reading and other related tasks like bill payment are performed by a large number of staff i.e., large number of employees are required.

- An expansive number of staff is utilized for meter reading and other related assignments like bill payment.

- Billing errors due to the carelessness of meter readers during meter reading and sometimes billing estimation.

- Careless usage of electricity by the consumer who is unaware of its cost.

WORKING PRINCIPLE

- The **Prepaid energy meter** with **Theft Detection system** mainly works for detecting internal as well as external theft .The system works for Theft Detection and also allow users to use prepaid energy meter functionality. Using this functionality users will pay in advance and use the exact amount of energy.

- The system start with GSM modem Connection and first configure the user number and give authority to that number .

- When the external or internal theft occurs in system the system immediately inform authority or user with message also system send message when the prepaid balance is low or zero.

PROPOSED METHODOLOGY

A. Mechanism

- Arduino based prepaid energy meter with theft detection has to design.

- Arduino is programmed with Arduino software.(IDE)

- GSM used to generate bill via SMS.

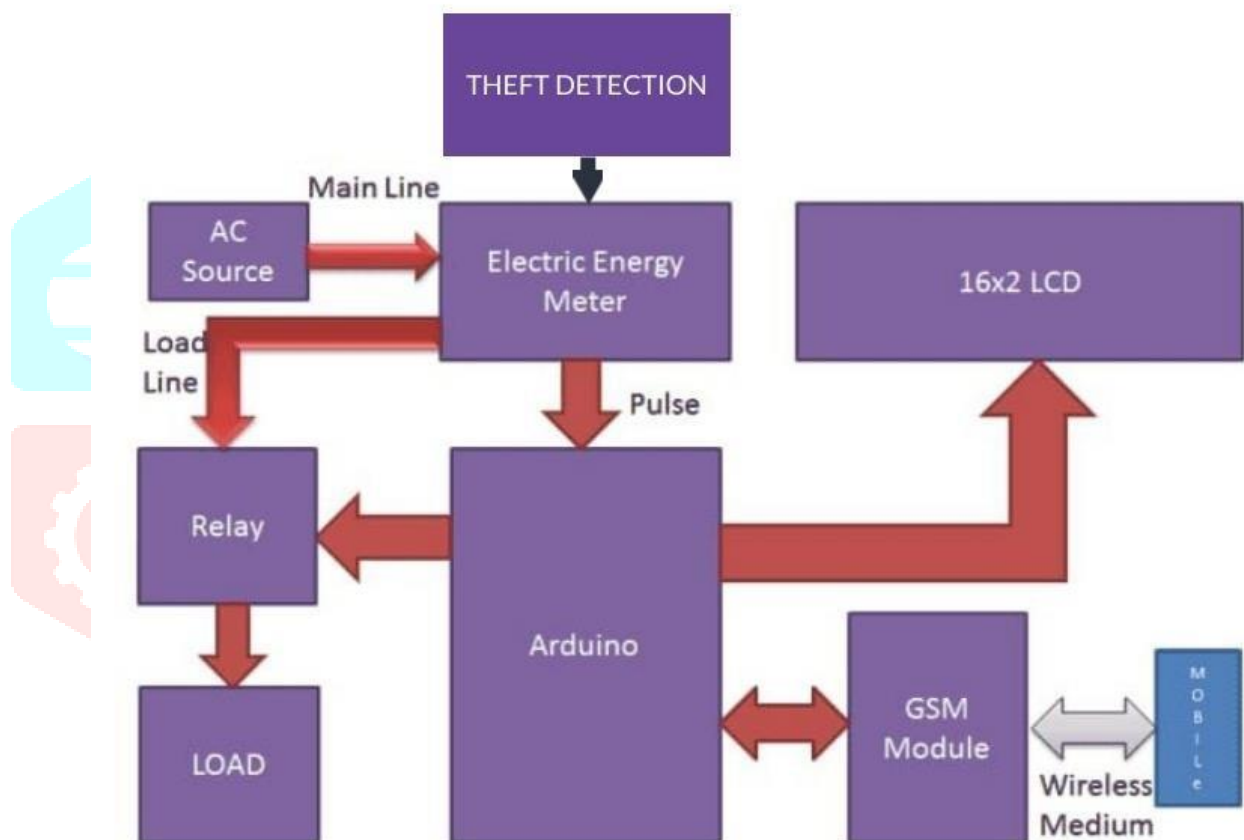- The LCD display is for information and display at output.

B. Software implementation

- Software part programming is through Arduino Uno software (IDE).

- Easy to write a code and upload it.
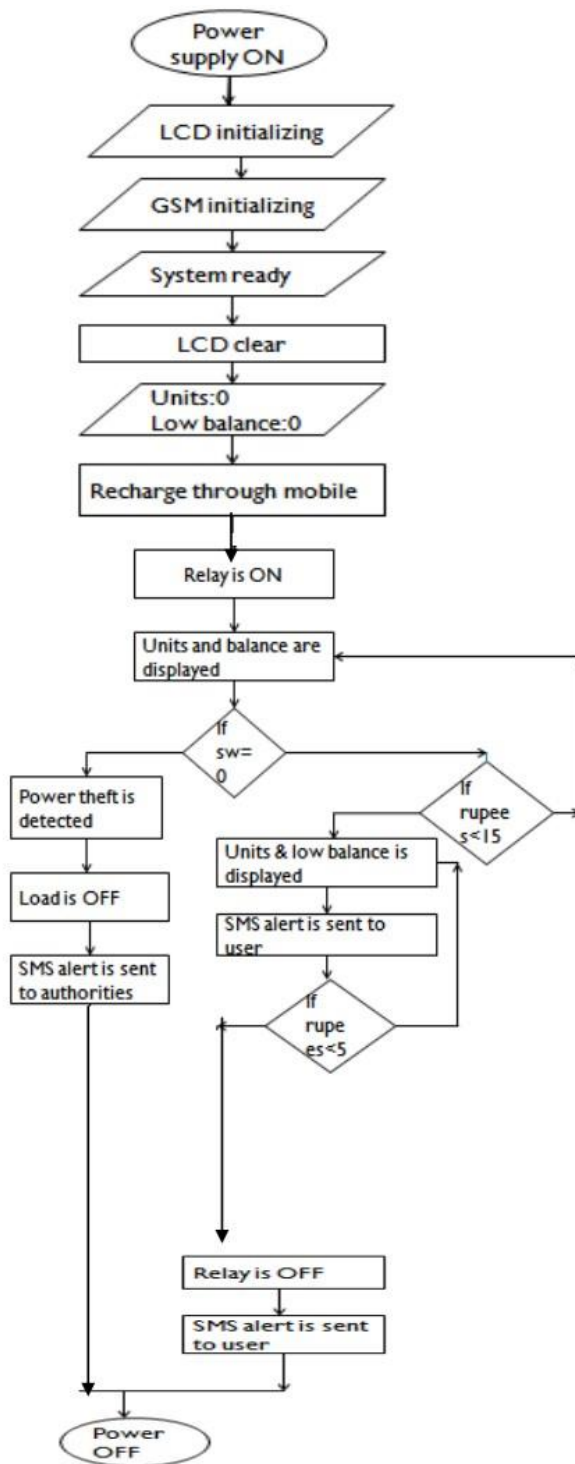
- C++ languages used for programming.

C. Hardware components ● Arduino Uno kit

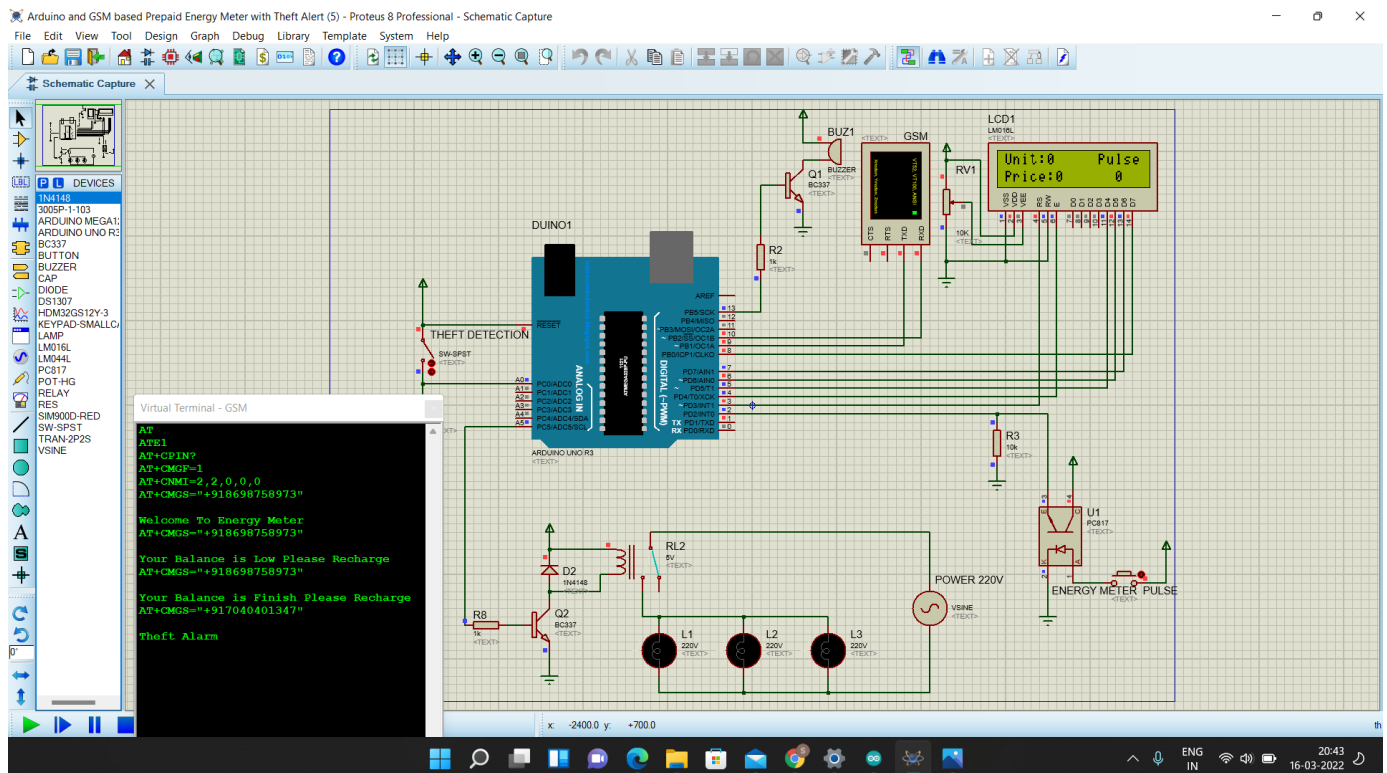● GSM sim800L ● Energy Meter.

● Optocoupler.

CONCEPTUAL BLOCK DIAGRAM

FLOWCHART OF PROPOSED SYSTEM

PROTEUS SIMULATION

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