St Vincent Pallotti College Of Engineering and Technology
Department of Information Technology
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Energy Monitoring System

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ABSTRACT: The energy audit may start from a basic walk through survey at one extreme to one that may span several phases. These phases may include a basic walk through survey, followed by monitoring of energy use in the industry services, and then model analysis using computer simulation of industry operation. Energy audit has an important role in identifying energy conservation opportunities in the different industrial area, while they do not provide the final answer to the problem; they do help to identify possible potential for energy conservation and induces the companies to concentrate their efforts in this area in a focused manner. The complexity of the audit is therefore directly related to the stages or degree of sophistication of the energy management program and the cost of the audit exercise.

INTRODUCTION: The energy consumption is a major concern faced by industries worldwide to improve the economic performance while to reduce its CO2 footprint, and monitoring the energy usage at the component level is essential. This paper presents a design of an IoT (Internet of Things) based interactive system which combines non-invasive sensors and data acquisition apparatus, robust communication networks, clouds-based databases and web servers to achieve real-time monitoring of energy usage in industries. The collected energy consumption data are published to the data centre automatically through the wireless communication network using the MQTT protocol, while a web server driven by Apache is developed to provide a human-data interaction dashboard in B/S (Browser I Server) structure. The system can not only assist industrial energy management but also provide a platform to improve energy-saving, emission reduction, along with other potentials.

SYSTEM ARCHITECHTURE

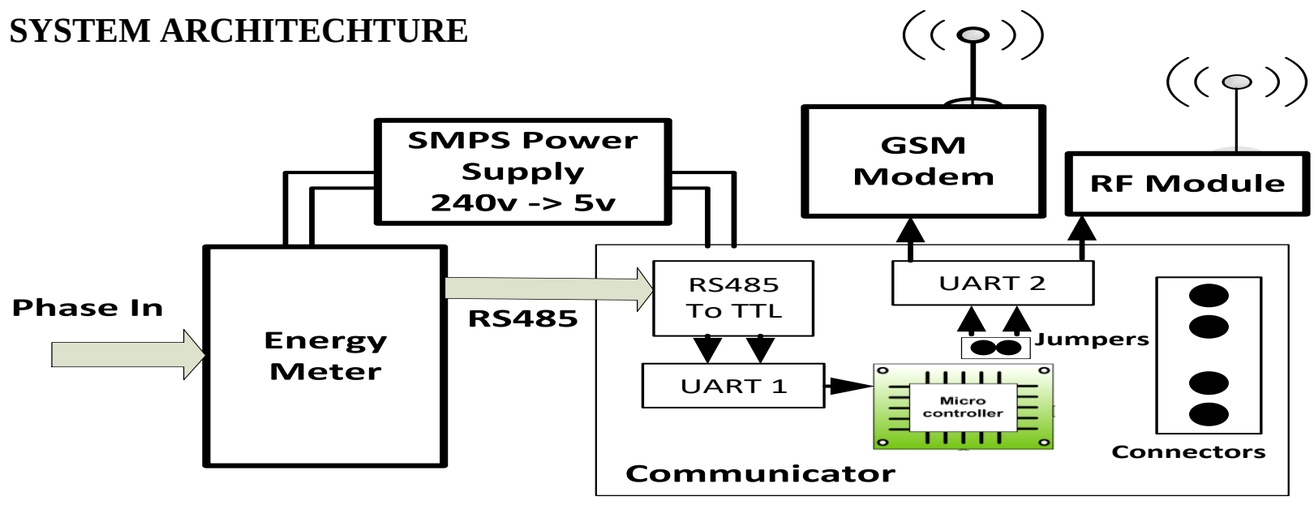

Fig:- Communicator module overview

Modules : Controller Unit, GPRS Module, Serial Convertor, User Interface.

APPLICATIONS:

- Engineering Institutes:
  for monitoring the energy consumption by different department, labs and workshops.
- Production industries:
  for monitoring the energy consumption by different high rated machines.
- Malls:
  for monitoring centralized air-conditioners or the other appliances like lifts or escalator.

Fig : Iot device

Fig : CTs

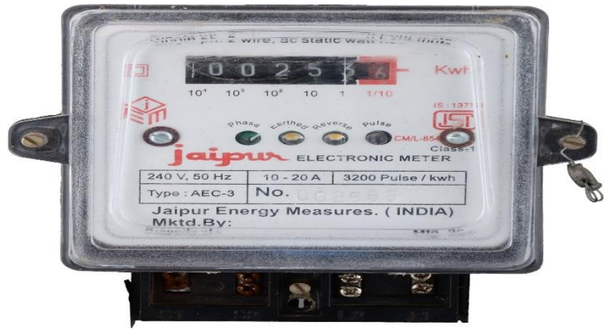

Fig :- Energy Meter

Fig:-Smart Meter

HARDWARE REQUIREMENTS: -

- SIM 800 GSM Modem
- Microcontroller AtMega328P
- Modbus-2-RS232 convertor
- SMPS

SOFTWARE REQUIREMENTS:-

- Embedded ‘C’ or hardware coding: Arduino IDE Software
- Web Page Design: HTML, JS, CSS,
- Web App Development: ASP.net
- Database: MS SQL Server

CONCLUSION AND FUTURE SCOPE:

CONCLUSION:

The main aim of the project is to design and construct the Energy Monitoring system that can be remotely operated to monitor different loads. This system will allow the user to get the live status of the loads connected to a particular system and which can be monitored remotely from any place.

FUTURE SCOPE:

The EMS system is implemented on small scale in different companies and industries to reduce the excess use of energy. by which the industries are able to reduce the cost of energy which is surplus. thus it has played vital role in excess cost reduction.

This system has to be modified and made fully automated so the system can analyze the readings on its own .so if it is made fully automated with the help of IOT then it will have a great success. so in future it can be made more efficient and it will be beneficial in all fields due to its more advance functioning. As we will be able to remotely monitor as well as the system can be able to do the changes on its own.

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