INDUSTRIAL ENERGY AUDIT AND STATISTICS ANALYSIS SYSTEM

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ABSTRACT:

The energy audit may range from one single walk-through survey to one extreme to one that may span several phases. The complexity of the energy consumption directly related to the training courses of the energy management program and the cost of the audit exercise Remote monitoring and control refers to a development of wireless sensing devices. Remote monitoring of various industries, sensors, machines, energy or power panels are the most demanding products and many organizations are working on it. Keeping both the important points in consideration. The proposed hardware modules are device with inbuilt functionality to work as a web client to communicate directly with web services. Providing microcontroller web functionality through GPRS protocol and reading meter parameter over MODBUS protocol is most hard part of the system.

1. INTRODUCTION

Currently, the energy management work of manufacturing enterprises faces some situations of too many metering points, decentralized metering points, laggard levels of information and automation and so on.
For a long time, they relied on getting values artificially thus there are many disadvantages like less information, slower transmission speed, longer processing cycles, more used energy, etcetera. Therefore, how to use the most advanced technologies to establish a comprehensive EM platform that can effectively improve the effectiveness of EM.
Some of the existing uses have grown substantially like heaters, air conditioners, and other uses such as hybrid electric vehicles and heat pumps. These changes are forcing the control of power systems because of electricity consumption variations: electricity is more consumed than in summer, which makes it subject to daily peaks and hollows. And because of the fact that power generation is being increasingly varied because of alternating renewable sources. The last reason is the development of distributed generation leads to a significant increase in the production and delivery of networks. Making the electrical network is incredibly easy to make. Currently the transportation network is already in the process of becoming more secure. However, these networks are poorly endowed with communication technologies. The challenge of smart grids thus lies in the distribution networks.

2. LITERATURE SURVEY:

Between 2010 and 2030, the economic growth should be as wide as we know today. At the same time, global carbon dioxide emissions are expected to increase at a rate greater than the energy demand. To solve this problem many changes should be made regarding the existing electrical system. Electricity is the most adaptable and extensively used form of energy. Generation of electrical energy is currently the largest single source of co2 releases, making a contribution to climate change. To finish the implications of climate change. The electrical power system distributes electrical energy.

Renewable energy sources such as solar power, wind power and fuel cell etc., should be used to meet the growing energy. There are many problems caused by integrating renewable energy sources into the grid that can be solved by redesigning the conventional power system infrastructure and architecture. The conventional power system should be more reliable, environmentally friendly and intelligent. To satisfy both a growing demand for energy and emissions, we need to work on a sustainable, reliable and economic way. To realize these capabilities, a new concept has emerged; the smart grid.

3. PROBLEM DEFINATION

This is an application of an energy saving system, which is based on IOT.

In order to design a remote energy monitoring system, this application uses many kinds of technologies, such as digital instrumentation, communications networks, software, databases and so on, setting centralized management, decentralized control, and remote monitoring as the goals. This remote energy monitoring system, which is based on IOT, can also be used to improve energy efficiency, but also some other aspects.

The EM work of manufacturing enterprises, faces some situations, too many metering points, decentralized metering points, laggard levels, information and automation, and so on. For a long time, they are relied on, so there are many disadvantages, such as less information, slower transmission speed, longer processing cycles, and more.So, how to use the most advanced technology to build a comprehensive EM platform.

4. PROPOSED SYSTEM

The Smart Grid is a smart power grid that uses computer technology to optimize production, distribution and consumption of electricity.

By storing an optimal amount of information on network status, smart grids There are new power systems in the smart grid. Smart grid is composed of communications, sensors, control and computational capability. The purpose of smart grid initiatives is to improve the management of energy consumption and cost.
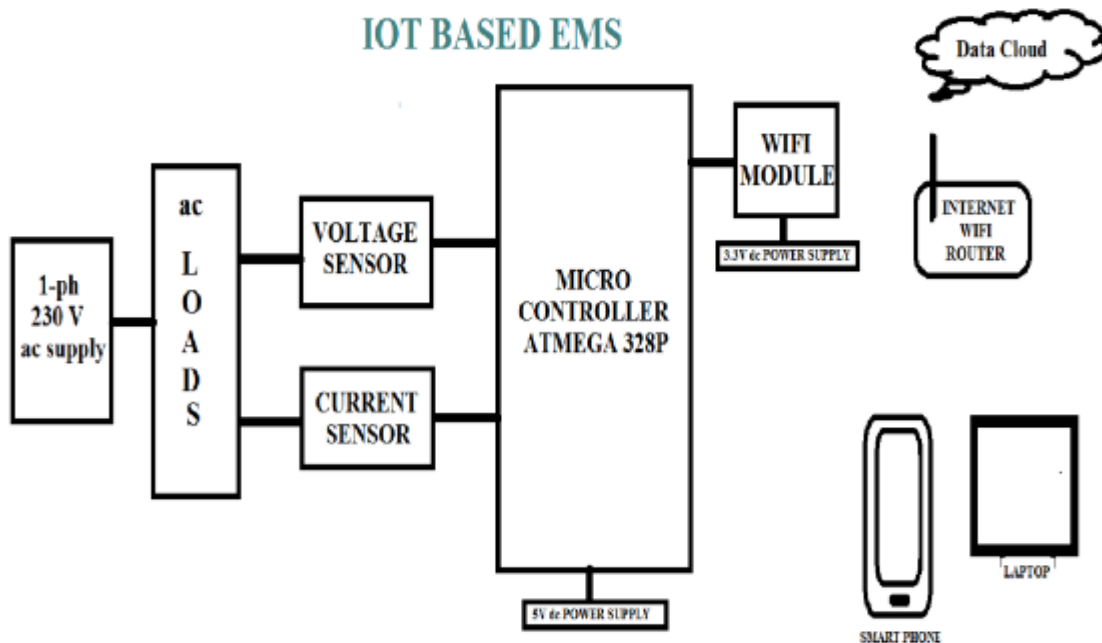
IOT BASED EMS

Fig: Proposed block diagram

5. MODULES:

- IoT Device (ArduinoBoard)
- Cloud Storage
- Web Application
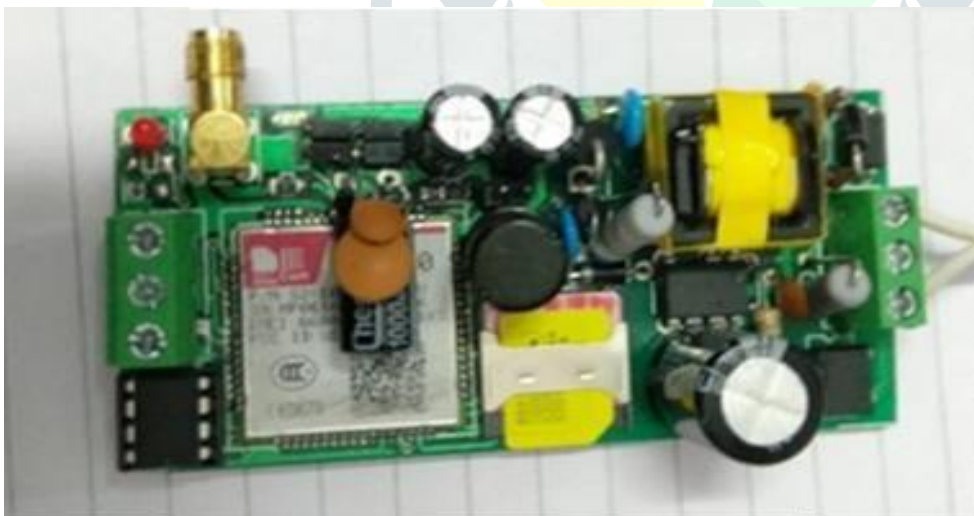 Implementation of IoT Device (At mega 8 controller)

Fig 5.1: IOT device (Arduino Board)

The abbreviation of AVR Microcontroller is advance virtual risc and MCU is the short term of the Microcontroller. A Microcontroller is a tiny computer on a single chip and it is also termed as a control device. Similar to a computer, the Microcontroller is made with a variety of peripherals like input & output units, memory, Timers, serial data communications, programmable. The applications of Microcontroller involve in embedded applications & automatically controlled devices like medical devices, remote control devices, control systems

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

Cloud Storage

To analyze data, you need to save data.

The Internet of Things (IOT) is rapidly changing the world, from helping manufacturers to determine when parts need replacing, to enabling utility companies to predict regional power consumption requirements. But extracting business insights from IoT data requires context. Temperature changes, humidity, time of year, time of day, the amount of time transpired–all potentially impact your operations, and what your data is really telling you.

Storing all the data collected by IOT sensors and other sources over time provides the context you need for real business transformation and as the months turn into years, your storage costs will only go up.


This includes hardware and software that directly interact with the system. It is connected to a network to communicate with each other, or to centralized applications. Devices might be directly or indirectly connected to the internet .A gateway enables devices that are not directly connected to the Internet to reach cloud services. Although the term *gateway* has a specific function in networking, it is also used to describe a class of device that processes data on behalf of a group or cluster of devices. The data from each device is sent to Cloud Platform, where it is processed and combined with data from other devices, and potentially with other business-transactional data.

Web Application (User Interface)

In these module company or a user can get whole analysis of a unit where IOt device is install.
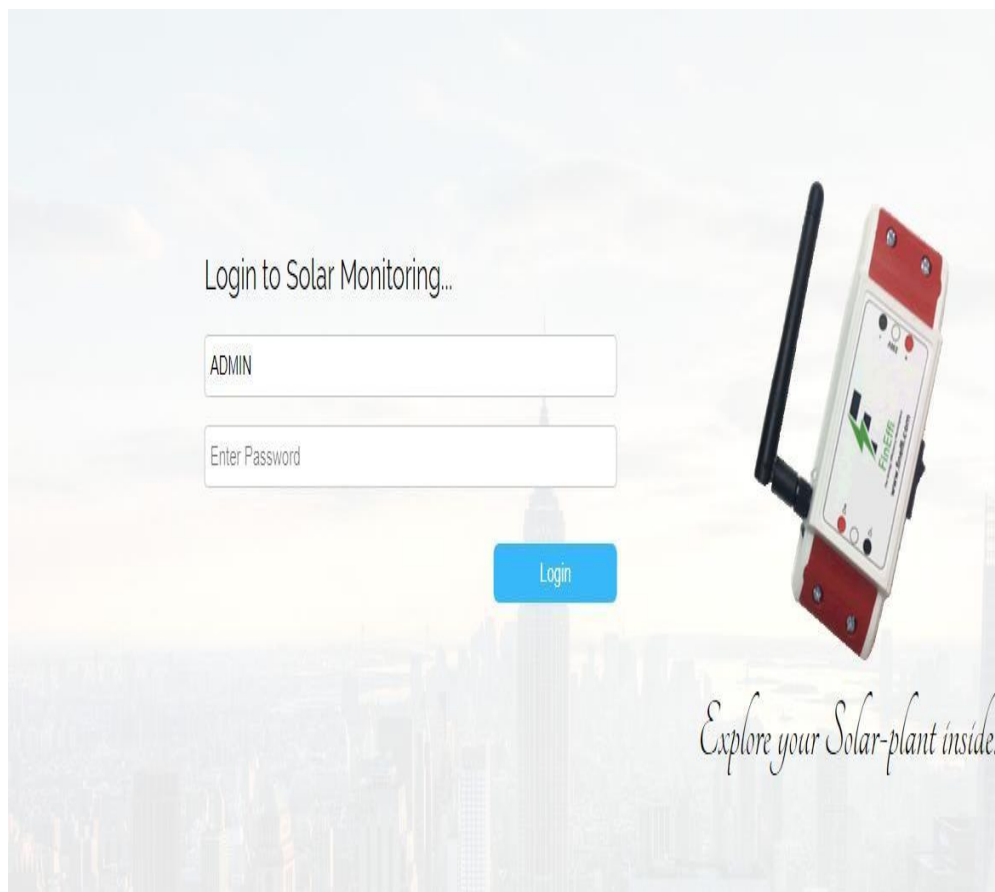
The login page should be the first page that users see in the modified application. It should provide two text fields - one for entering a login name and one for entering a password. In addition it should have a command button that initiates the password checking action. If either of the text fields is left blank it is an error that must be reported to the user. If both fields are filled in but there is no record of the user name or the password is incorrect that must also be reported to the user.
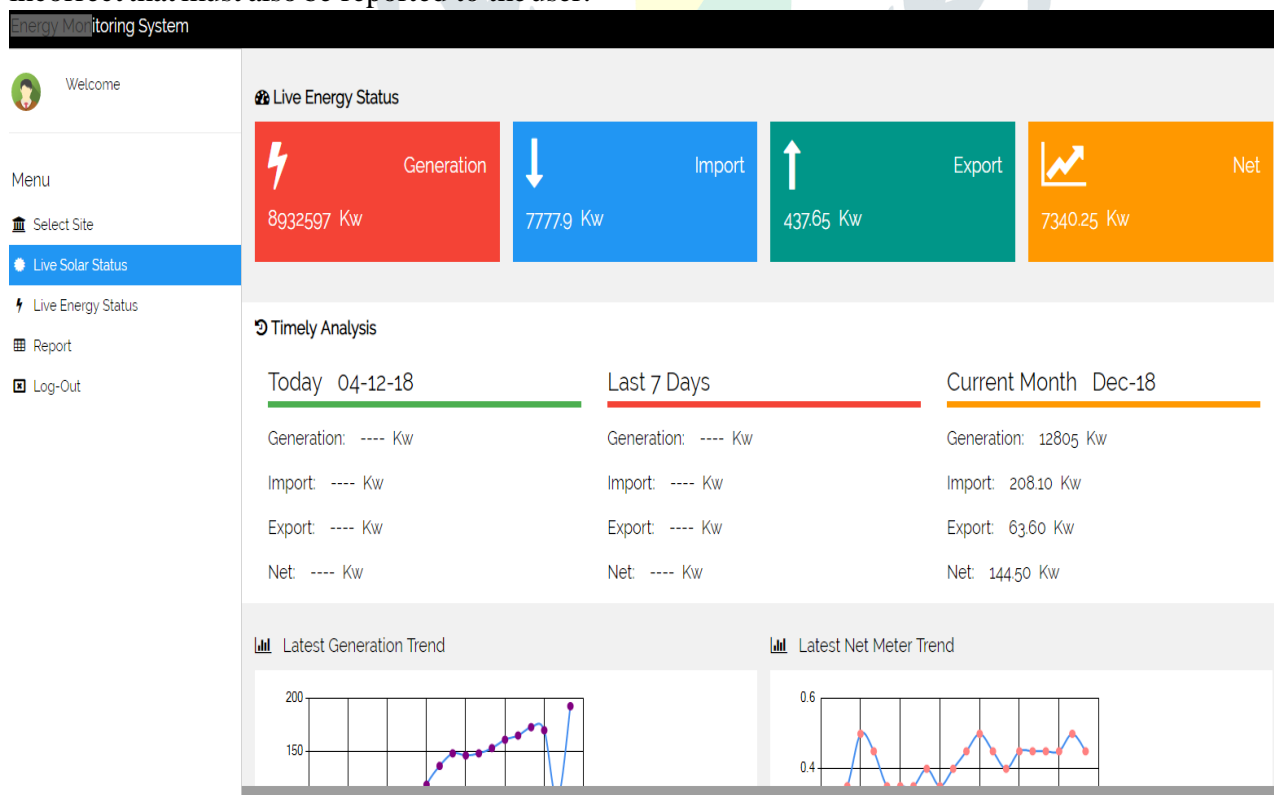
: Energy Consumption and monitoring page

A sensor unit that clips on to a power cable connected to your electricity **meter** – this monitors the magnetic field around the power cable to measure the amount of **energy** you're using. A transmitter – this sends the information wirelessly to the hand-held device so you can read it on the screen Graphical representation of a data is show on live energy tab.

6. Conclusion and Result

- In a gist, the energy consumption was monitored and desired approach was taken by using Remote monitoring system the parameters were first categorized and from the literatu survey, their respective procedure and techniques were found. The study lead to the designing of the RMS using two approaches by RF module and by GSM module for monitoring on E-vista software. The simulation results are shown.

- The energy auditing is need of industries in order to save unnecessary energy consumption and to know the exact specification of requirement of every device or the machine, hence the proposed system is taking this development at next level by enhancing the term IoT (internet of things) for industrial remote energy parameter monitoring system.
- The advantages of wireless made them a promising platform sensor node over traditional sensing have for remote monitoring systems. The objective of energy audit is to identify the end use of energy in industry, and as a feasibility study leading.

- Implementation of an energy management program. The audit procedures can be expanded as needed in the various phases of the energy program, with the application of each succeeding phase yielding more information on energy use, and more opportunities for raising energy efficiency

7. References

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