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IOT BASED ON ENERGY MANAGEMNT SYSTEM USING PIC MICROCONTROLLER

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1.1 ABSTRACT:

In Electrical Energy Management to updating of the consumer needs automation in the form an Energy Management System (EMS).EMS plays a decisive interface between the Demand Side Management (DSM) techniques like Demand Response Programs (DRP) and the physical action of performing energy management.Its one technique of an IOT Based on Energy Management System using Pic microcontroller.

In this system used for power exceeding in demand mode when the load disconnected from source. This system comprises of a GSM module which work as the receiver for device. This sends commands to the microcontroller which executes according to the received and sends to the SMS for Android mobile. By using this system, thereby which low power energy consumption and improve the power factor. This prototype can be used consumer in House hold applications, small scale industries, and corporate offices.

2.1 KEYWORD:

EMS(Energy management system), EMS(Energy Monitoring System),PEMS (Predicting the Energy Management System), ECS (Energy Controlling System), and LECS (Low Energy Consumption System).

3.1 INTRODUCTION:

There are various examples of Home Area Network (HAN) implementations found in the literature but most of them focus on the energy management by task scheduling and the demand side management techniques. Very few focus on the actual hardware implementation and its cost which are of prime importance for large scale adaptability of HEMS. However, other architectures for home area networks have also been proposed. In the authors discuss different architecture model choices for home area networks for smart grids and state that the choice of the architecture model for smart grid deployment has a significant effect on its success.

Centralized and distributed, where a smart meter controls the devices in a centralized architecture while the devices are controlled through a home gateway in a distributed architecture. Distributed model is more scalable, flexible and provides a greater demand response control and therefore the architecture that we use resembles this model. A lot of the literature reviewed focused also on the software development for Home Energy Management Systems. In the authors present

an energy management system, Green Home Service (GHS) based on a task scheduling approach despite low commercial activities on HEMS, there have been a lot of study activities and projects.

4.1 EXISTING SYSTEM:

To decrease our in need of on fossil fuels more renewable sources of energy like wind, solar and hydro are being presented. But, our strong point of energy production for many years is hinged on fossil fuels. So, energy efficiency is well thought-out as the mostsignificant fuel for the future of all the electricity produced in the flora and fauna, buildings put away more than 40% of the energy. Studies have shown that just by interactive real time energy information to the consumers could end result in unto 20% savings in their energy consumption. Additional to this Home Energy Management Systems (HEMs) remain being advanced that arrange for more finer-grained control of the devices in constructions. An essential component of HEMs

5.1 PROPOSED SYSTEM:

The predictive analysis based home energy management is proposed in this project. The pic microcontroller based control and monitoring system is used. To calculate the energy consumption by load is calculated through current sensor and voltage sensor. The different load voltage is calculated and read by the microcontroller. The IOT module is interfaced with the controller which is used to update the home energy consumption reading to the webserver. Here we used esp8266 is for the IOT module. The IOT server is linked with our controller kit through this module by setting user name and password by the user.

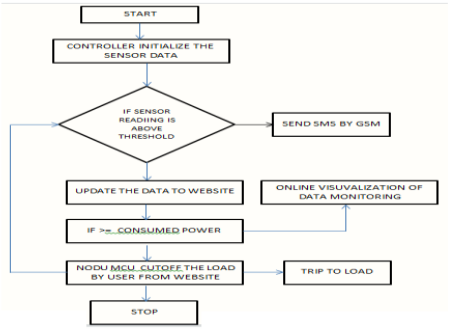


Figure 5.1 Flow Graph of Working

The second thing is to estimate the cost analysis of the consumed power. Whenever the load consumption is exceeds the limits the GSM send the message to the user. And after the node mcu is used to control to cut the particular load. Total progress of our project is displayed in LCD display.

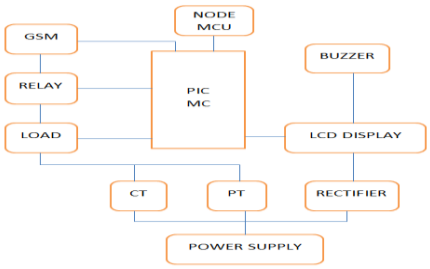


Figure 5.1 Block Diagram of Proposed System

6.1 DESIGN OF EMS: PIC MC

PIC is a Peripheral Interface Microcontroller which be thereadvanced in the year 1993 by the Broad-spectrumDevices Microcontrollers. It is organized by software and programmed in such a way that it performs different tasks and controls a generation line.

The projectingresearch based home energy management is suggested in this project. The pic microcontroller based control and specialist carescheme is used. To evaluate

the energy consumption by load is calculated through current and voltage. The different load voltage is calculated and read by microcontroller.

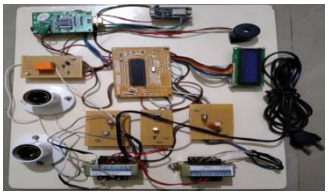


Figure 6.1 Hardware design

The IOT segment is interfaced with the controller which is used to update the home energy consumption reading to the webserver. Here we used esp8266 is for the IOT module. The IOT server is linked with our controller kit through this module by setting user name and password by the user. The second thing is to educated guess the cost analysis of the consumed power. Every time the load consumption is go above the limits the GSM send the message to the user. And after the NODEMCU is used to control to cut the individual load. Total evolution of our project is displayed in LCD display. Then BUZZER alert to the overload using the consumer in demand mode period.

7.1 GSM:

Figure 7.1 GSM Module

The GSM schemebe present the highestfar and widerecycled cellular toolsnowusage in the flora and fauna today. It consumesbe there a mainlyeffective cellular mobile phoneequipment for a change of the full pictureas well as the capability to roveuniversal with the foregone conclusion of presence able to be able to operate on GSM systems in correctly the same way providingput forwardarrangementsbe located in residence.

SIM800C is a quad-band GSM/GPRS module that works on rates GSM850MHz, EGSM900MHz, DCS1800MHz and PCS1900MHz.SIM800C countryside GPRS multi-slot class10/class12 (optional) and maintenances the GPRS coding patterns CS-1, CS-2, CS-3 and CS-4.

8.1 ESP8266 Wi-Fi Module:

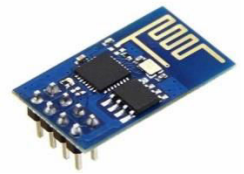


Figure 8.1 ESP8266 Wi-Fi Module

ESP8266 tin can be used as an outside Wi-Fi module, consuming the ordinary AT Thorough knowledge set Firmware by joining it to every microcontroller using the serial UART, or in a straight lineadvantage as a Wi-Fi-enabled micro controller, by programming a new firmware using the on condition that SDK.The GPIO pins allow Analog and Digital IO, plus PWM, SPI, I2C, etc.A extensiveimplementation has been simplified by the very diffident price, alternating from 2.50 to 10 USD conditional on the countrysidepresented by the manufacturers.

9.1 RESULT:

9.1.1 NORMAL MODE (100W)

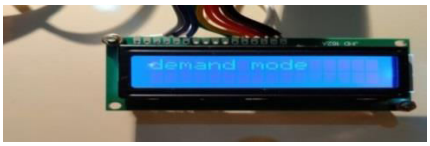
Starting Normal Mode function.All dayMonitoring the Current, Voltage, and, Power.Monitoring the Unit, and, Cost

Figure 9.1.1 Normal mode function display

Figure 9.1.1 Normal mode Flow Graph

9.1.2 DEMAND MODE (100W)

Set as a Demand Mode Selected on mobile phone and Starting Demand Mode Function. All day Monitoring the Current, Voltage, and, Power demand period. Monitoring the Unit, and, Cost. Then High load using to indimate the Display and Buzzer Sound.



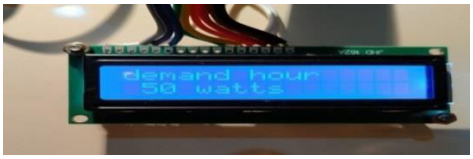


Figure 9.1.2 Demand mode function Display

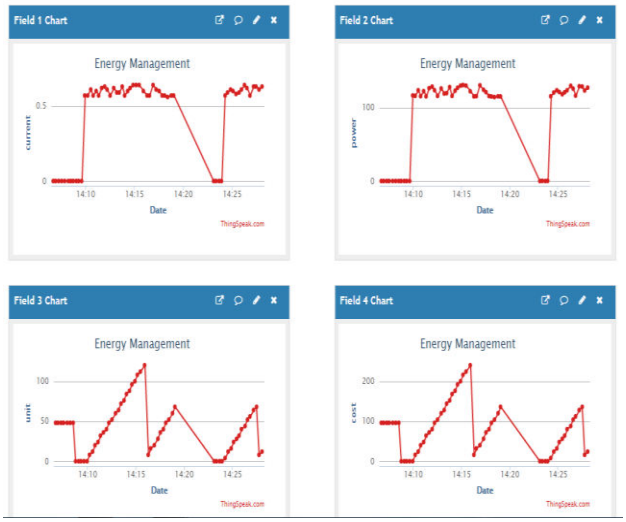


Figure 9.1.2Demand mode Flow Graph

10.1 CONCLUSION

In this learning a systembe theretalk over for consumption in the improvement of typicalprogram of day-to-day energy use of part of tools, in specificeverydayreturn to average energy use side view.Yet to come EMS carrying outperiods are go on in this section. The currentmodifications in detecting, quantities, moving and computation have now reached a stage where the digital data acquisition architecture that consumesattended the 24-hour care and controller of the

commandnetwork for over half a periodhave need of a important change to totallymake use of the new equipment and understand the capacity of a EMS of uses.

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