

WSN-Based Smart Building Power Management System Using IOT

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Abstract:-The development and design of the wise monitoring and controlling system for household electrical home appliances in real-time continues to be reported within this paper. The machine primarily monitors electrical parameters of household home appliances for example voltage and current and subsequently calculates the ability consumed. The novelty of the product is the implementation from the controlling mechanism of home appliances diversely. The developed system is really a low-cost and versatile functioning and therefore can save electricity cost of most effective and quickest. The prototype continues to be extensively tested in tangible-existence situations and experimental answers are very encouraging.

Keywords:-Energy management, home automation, intelligent control system, wireless sensor network, ZIGBEE.

I. INTRODUCTION

Wireless sensor networks (WSNs) have grown to be more and more important because of remarkable ability to watch and manage situational information for

various intelligent services. It was predicted that service and private care wireless mechatronic systems will end up increasingly more ubiquitous at home soon and will also be very helpful in assistive healthcare

designed for the seniors and disabled people [1]. Wireless mechatronic systems contain numerous spatially distributed sensors with limited data collection and processing capability to monitor the ecological situation. Because of individual's advantages, WSNs has been used in many fields, like the military, industry, ecological monitoring, and healthcare. The WSNs are more and more getting used in your home for energy controlling services. Regular household home appliances are monitored and controlled by WSNs installed in your home [2]. New technologies include cutting-edge advancements in information technology, sensors, metering, transmission, distribution, and electricity storage technology, in addition to supplying new information and versatility to both consumers and providers of electricity. There are many plans to interconnect various domestic appliances by wireless

systems to watch and control for example provided. However the prototypes are verified using Test bed situations. Also, wise meter systems have been made to specific usages particularly associated with geographical usages and therefore are restricted to specific places. Different information and communication technologies integrating with smart meter products happen to be suggested and examined at different flats in a residential district for optimal power utilization, but individual controlling from the products are restricted to specific houses. There's been design and developments of wise meters predicting using power consumption. However, a minimal-cost, flexible, and powerful system to continuously monitor and control according to consumer needs reaches the early stages of development. Within this study, we've designed and

implemented a Zigbee-based intelligent home energy management and control service. We used the ZigBee technology for networking and communication, since it has low-power and occasional-cost qualities, which enables it to be broadly utilized in home and building conditions. The paper concentrates on human-friendly technical solutions for Monitoring and simple charge of household home appliances. The inhabitant's comfort is going to be elevated and assistance can be provided. This paper emphasizes the realization of monitoring and controlling of electrical home appliances in lots of ways. The developed system has got the following distinct features [3].

i) Utilization of Traci with opt-isolated driver for controlling electrical appliances: Household home appliances are controlled either remotely or instantly with the aid of fabricated smart warning composed of trial -BT138.

ii) No microprocessor / micro-controller: The style of smart sensing unit doesn't need a processing unit in the sensing end.

iii) Versatility in managing the home appliances: Depending on the user needs, home appliances could be supervised and controlled diversely.

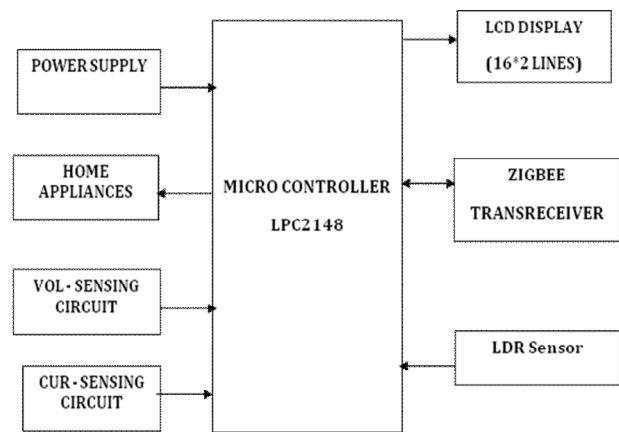


Fig .1. (a) Field Section

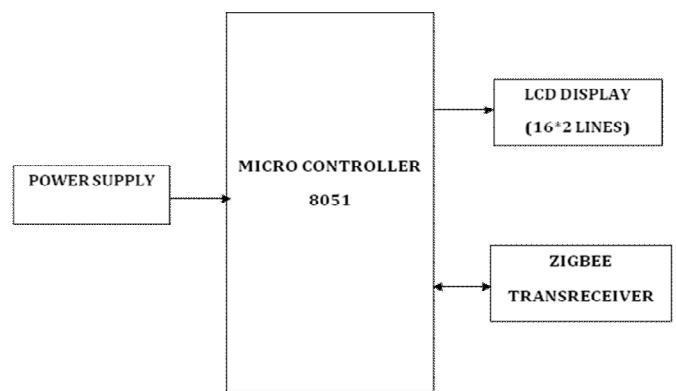


Fig.1. (b) Monitor Section

Fig.1. Block Diagram representation

II. RELATED WORK

Within this section, we briefly discuss the present works about smart home systems in line with the wireless communication technology. Han et al. suggested a house Energy Management System (HEMS) while using Zigbee technology to lessen the standby power. The recommended system includes an automatic standby power cutoff outlet, a Zigbee hub along with a server. The power outlet having a Zigbee module reduces the ac power when the energy use of the unit attached to the power outlet is below a set value. The central hub collects information from the ability channels and controls these power channels through the Zigbee module. The central hub transmits the present state information to some server along with user can monitor or control the current energy usage while using HEMS interface. This facility may create some uneasiness for those customers. Gill et al. forecasted a Zigbee -based home automation

system. This technique includes a home network unit along with a gateway. The main area of the development may be the interoperability of different systems in your home atmosphere. Less importance is provided to the house automation in this paper, wireless sensors have the effect of calculating Current illuminations and also the lighting is controlled by applying the type of user's actions and profiles. Song et al. recommended a house monitoring system using hybrid sensor systems. The fundamental idea of this paper is roaming sensor that moves the right location and participates within the network once the network is disconnected [4]. Such and Koi suggested a smart home control system based one wireless sensor/actuator network having a link quality indicator based routing protocol to boost network reliability. The above mentioned pointed out home monitoring and

controlling systems have restrictions regarding true home automation for example: i) energy consumption control mechanism is restricted to simply certain products like light illuminations, whereas several household appliances could be controlled ii) energy control relies on fixed threshold power consumption, which might not be applicable to different consumers iii) manipulating the home appliances through network management functions, used inhabitant requirements can vary based on their behavior although not with network qualities. Not really a single system has had into consideration of variable valuation on electricity that is consumed throughout night and day. Within this paper, a minimal-cost, flexible, and real-time wise power management system, which could easily integrate and operate with the house monitoring systems [5].

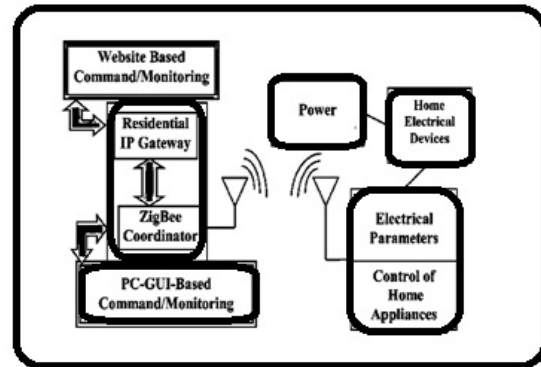


Fig.1. Proposed System Architecture



Fig.2. Result for Power calculations

III. CONCLUSION

A wise power monitoring and control system continues to be designed and developed toward the implementation of the intelligent building. The developed system effectively monitors and controls the electrical appliance usages in a senior's home. Thus, the actual-time monitoring from the electrical home appliances can be

seen via a website. The machine could be extended for monitoring the entire intelligent building. We goal to determine the regions of daily peak hrs of electricity usage levels and come with an answer through which we are able to lower the consumption and enhance better usage of already limited sources during peakhrs. The sensor systems are designed with assorted user interfaces suitable for customers of different ability as well as for expert users such the system could be maintained easily and interacted with plain and simply. This research also aims to evaluate consumer's response toward awareness of wise grid technologies, their advantages and downsides, possible concerns, and overall perceived utility. The developed product is robust and versatile functioning. Forth last three several weeks, the machine could carry out the remote monitoring and charge of home appliances effectively. Local

and remote user connects are simple to handle with a novice consumer And therefore are efficient in handling the procedures.

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