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A REVIEW ON SMART HOME LOAD MANAGEMENT SYSTEM

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ABSTRACT:- When power generation is not sufficient with respect to its demand. It is an effective approach to manage consumer loads during power shortage. Load management is the process of scheduling the burdens to lessen the electric energy utilization and additionally the most extreme interest. Burden the executives systems include changes to gear and additionally utilization designs on the client side. To diminish top interest consequently, another innovation, for example, presented here will be broadened. As innovation is progressing so houses are additionally getting more brilliant. Current houses are steadily moving from ordinary changes to unified control framework. By and by, regular divider switches situated in various pieces of the house makes it hard for the client to go close to them to work. Much more it turns out to be more hard for the older or truly debilitated individuals to do as such. Savvy load the board framework gives a generally present day solution. A home automation system designed by infrared that design to help elderly and handicapped people live a more independent life the peoples do not have possibilities to use the infrared or the remote control they also do not use this technology. Hence for efficient usage both infrared and Bluetooth with low cost efficient system. A hardware prototype is then designed and applied so as to validate the proposed control system. The results show that the proposed scheme allows for an efficient peak shaving during peak hours. For some typical domestic consumers, the financial benefits are also calculated.

Keywords:-Transformer, Microcontroller, Arduino, Relay, Rectifier, Sensors.

I. INTRODUCTION

We propose, design, and construct a smart load management (SLM) system that can be effectively utilized to meet up emergency demand (light and fan) of consumers when power generation is not sufficient with respect to its demand. It is an effective approach to manage consumer loads during power shortage.

However, load management is the process of scheduling the loads to reduce the electric energy consumption and or the maximum demand. It is basically optimizing the processes/loads to improve the

system load factor. Load-management procedures involve changes to equipment and/or consumption patterns on the customer side. There are many methods of load management which can be followed by an industry or a utility, such as load shedding and restoring, load shifting, installingenergy-efficient processes and equipment, energy storage devices, co-generation, non-conventional sources of energy, and reactive power control.

To encourage load shifting in industries, and thereby to reduce peak demand automatically, a new technology such as introduced here will be extended

II. LITERATURE REVIEW

Automation was first introduced into the world market in the 1970s, but it failed to meet the expectations of people and was unsuccessful. There were various reasons associated with the failure of the automation system. The system was neither user friendly nor cost efficient. Currently, the foremost point to be kept in mind when designing a automation system is that it should be cost-efficient and easy to install K. Y. Lee and J. W. Choi in their research on the Housing Learning and Improvement Network in 2003, defined a Smart management as a "unit where all the appliances of the house are connected together and controlled and monitored remotely"

T. Tamura et. al.[2], in their research, constructed the welfare techno houses in Japan in 2003. The motive behind the project was to monitor the health of the disabled and older people living in the home, thereby improving their quality of life

.D. J. Cook et. al. [3] successfully conducted by the Home project at the University of Texas, Arlington. Here sensors to detect the state of the environment, and with the help of controllers, took the necessary action to maintain equilibrium. These sensors form an ad-hoc network to make the decisions.

Kanmaet. al.[4] conducted a medical research to monitor people who require medical help and present a wireless solution at the University of McGill in Canada. The project made use of cell phones and inexpensive sensors. It worked by making use of wireless protocols such as Bluetooth, ZIGBEE, as well as GSM and analyzing data through an adaptive architecture. The research had an architecture that consisted of three main parts. The major benefit of this project is that it could be implemented at an inexpensive price in a short span of time. In the past few years, significant research has been conducted in the field of Smart Homes to make the technology better for handicapped and elderly people.

R. A. Ramlee et.al. [5] presents the not only overall design of Home Automation System (HAS)but also this system is designed to assist and provide support in order to fulfil the needs of elderly and disabled in home.

Pawan Sharma &Joshi Deepikaet al. [6]has proposed a methodology about controlling home appliances through remote operated master switch via infrared technology. They have introduced a unique remote-control circuit to permit the automatic control of switches and switch boards from a remote location that does not require any internet network as well as mobile network or battery. It was a completely hardware-based system and does not require any software to control and monitor the system. Samiran Maiti & Pabitra Kumar Nandi et al. [7] proposed a solution of home appliance controlling by

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the use of IR remote control signal decoder. Author discusses about the use of At mega 328 timer IC , with IR sensor to automate home. It is also a hardware-based project.

III PROPOSED SYSTEM

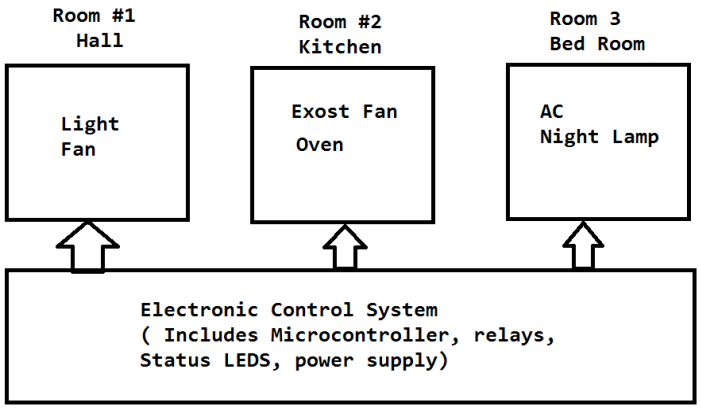

Fig. Load Management

3.1 Transformer

A transformer is defined as a passive electrical device that transfers electrical energy from one circuit to another through the process of electromagnetic induction. It is most commonly used to increase (‘step up’) or decrease (‘step down’) voltage levels between circuits.

The working principle of atransformer is very simple. Mutual induction between two or more windings (also known as coils) allows for electrical energy to be transferred between circuits.

3.2 Microcontroller ATmega328P

The ATmega328 is a microcontroller that is assembled on the single-chip and manufactured by the Atmel (who was producers and creator of semiconductors materials) in the mega AVR group of microcontrollers. The processor core of this module is eight-bit RISC (reduced instruction set computer) which has Harvard architecture with some modification. In this controller 32 kilobyte already built memory exits. In today’s post, we will have a detailed look at its working, pinout, structure, and some other related factors. The Atmega328 is a very commonly used microcontroller board created by the Atmel. It can support data up to eight bits and has a flash memory of thirty two-kilo bytes. This module also comprises of one kilobyte of EEPROM and two-kilo byte of inner static random access

memory. Like Arduino, UNO atmega328 is also used with the Arduino Duemilanove board. This type of Arduino has two types of microcontroller shops first is atmega328 and the second one is atmega168.

3.3 LCD Display

You can easily interface a liquid crystal display (LCD) with an Arduino to provide a user interface. Liquid crystal displays (LCDs) are a commonly used to display data in devices such as calculators, microwave ovens, and many other electronic devices.

The 16x2 LCD used in this experiment has a total of 16 pins. As shown in the table below, eight of the pins are data lines (pins 7-14), two are for power and ground (pins 1 and 16), three are used to control the operation of LCD (pins 4-6), and one is used to adjust the LCD screen brightness (pin 3). The remaining two pins (15 and 16) power the backlight.

IV.HOW DOES IT WORK?

When any one enter/exist in the room, our detection logic turns ON and detects whether it is entry or exit of a person. To detect entry or exit of person we have used two IR sensor modules. When IR1 triggers first and afterward IR2 this implies section of individual and when IR2 triggers first and afterward IR1 then this implies exist of an individual. After recognizing section and exit of an individual IR sensor offers contribution to microcontroller. Microcontroller will compute the number of people are there in rooms and likewise show the tally. At the point when any individual is free in room and switch ON bulb and when that individual leaves the room without turning it OFF our savvy rationale load up will distinguishes the present circumstance and turns OFF all heaps without any individual. Control board which is kept at ‘Hall’ is main control board and control boards which are kept at ‘kitchen’ and ‘Bed room’ are auxiliary control boards. Auxiliary control boards give status of person available in the room and main boards will display it on LCD.

V. CONCLUSION

This article has presented a review of the literature related to smart home activities, with a focus on clarification of the targets of a shrewd home: worked on home computerization and energy the board and diminished natural outflows. Destinations power charge minimization, client solace level expansion, utility pinnacle load decrease, and CO2 decrease. This article has examined an assortment of EMS applications regarding end-user appliance scheduling, control, automation, and communication. In conclusion, this study has clarified the role of S in a future energy efficient environment.

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