

Design of Effective Energy Preservation System

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Abstract—Electric energy saving is playing an important role in the present situation of world. Our main aim of project is to save electric energy by using latest technology of ARM 11. In this project we are using Raspberry pi as a main processor to which energy meter is connected to monitor the consumption of electric energy. When the consumption of units is exceeded then automatically power source switches from electric energy to solar energy. This over all operation can be controlled and operated by raspberry pi processor. With this technology most of the electric energy will be saved and it can be given to future generations.

II. LITERATURE SURVEY

Keywords-Raspberry pi, Energy meter, Electric appliances,

I. INTRODUCTION

Nowadays, Most of the peoples using lot of electric appliances in their homes, which consumes more electric energy and charges per unit energy is also increased as the population is increased. Most of the organizations using renewable energy sources like solar power, wind energy etc. But the equipment associated with solar installation is somewhat costlier. Common peoples are unable to use it as cost is more. electricity consumption in India is nearly doubled from 2000 so far. It's been anticipated that the commercial, industrial and civil building sector of India will reach up to 66% of the land occupancy by 2030. per annum roughly 900 million square meters of the land are going to be built up by the industries and domestic buildings which are like adding roughly two Mumbai cities in only one year as long as no energy conservation programs were adopted then electricity consumption in such buildings are going to be doubled by 2030 than it had been in 2010 costlier. Common peoples are unable to use it as cost is more. electricity consumption in India is nearly doubled from 2000 so far. It's been anticipated that the commercial, industrial and civil building sector of India will reach up to 66% of the land occupancy by 2030. per annum roughly 900 million square meters of the land are going to be built up by the industries and domestic buildings which are like adding roughly two Mumbai cities in only one year as long as no energy conservation programs were adopted then electricity consumption in such buildings are going to be doubled by 2030 than it had been in 2010.

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Bhushan C. Behede, Mohammed. Juneduddin, Yogesh D. Sonawane, Dattatray S. Doifode, Mahesh Dalwani Department of Mechanical Engineering, Shri Vile Parle Kelavani Mandal's Institute of Technology, Dhule, Maharashtra, India defined the paper on Generation Distribution and Utilization of an Electrical Energy in Industrial and Domestic Buildings. This paper shows the present status of demand and provide scenario of electricity within the world and India. Generation capacities as per the renewable and non-renewable sources in India are discussed intimately.

Iman Khajenasiri, Abouzar Estebarsari, Marian Verhelst, Georges Gielen defined the paper on A review on Internet of Things solutions for intelligent energy control in buildings for smart city applications. It aims to attach numerous heterogeneous devices through the web, that it needs a versatile layered architecture where the items, the people and therefore the cloud services are combined to facilitate an application task.

Hatem Elaydi, Imad Ibrik, Eyad Koudary defined the paper on Conservation And Management of Electrical Energy In Gaza Strip Using Low Cost Investment. This paper presents a coffee cost electrical conservation through energy management to enhance electricity efficiency in Gaza Strips.

Bhagat Singh Tomar, Dwarka Prasad defined the paper on Utilization of Electrical energy & its recent advancements. This paper is presented to focus light on utilization of electricity to enhanced its outcomes & solution to unravel the upcoming problems in power sector.

III. PROPOSED DESIGN

A. Hardware Description:

Complete hardware consists of Raspberry pi, Energy meter, relay devices, electrical appliances. Energy meter has 3 LEDs Red, Green, White. Each LED has its own operation and indication. 12V Battery has been connected externally to raspberry pi in order to activate it in proper way relay has been connected to appliances such as electric bulb, DC Motor, AC Fan. here the relay is used to activate the appliances. pin no.17 of raspberry pi is connected to relay and 5V pin of raspberry pi is connected to 5V pin of relay. So that devices can be activated. through motor driver IC and relay, DC motor will runs. Energy meter has 3 LEDs. Red LED represents power entered into energy meter and Green LED

represents power supplied to appliances. HDMI Cable should be connected to monitor to view the data updates running internally in raspberry pi as it doesn't contain any display device.

B. Working:

When power supply is given from battery to the raspberry pi all pin functions will be enabled. And appliances which are connected with relay are turned on .Now the energy meter starts monitoring the power consumption/unit by indicating the Red LED and Green LED. We will put a threshold value in writing the program at which energy meter stops its working. Means here the threshold value means if the meter reading exceeds the particular value billing can't be done as the energy meter stops working at that point. like this electric bill will be reduced then you have to make proper arrangements (I.e. solar power, UPS Inverter supply). the raspberry pi is working as a main processor to activate and deactivate the appliances and storing the threshold values and operating of energy meter at that instant of time.

IV. EXPERIMENT RESULTS



Fig.1. Energy meter reading when appliances turn ON



Fig.2. Monitoring the energy meter readings in PC



Fig.3. Turn OFF the appliance when current bill exceeds the limits

V. CONCLUSION

In this paper, We have developed a system that reduce our electric bill by putting our desired units as a limit. this project can be further implemented by using IOT Technology. By using mobile phone or web link we can turn ON and turn OFF the Electrical appliances and by using GSM Modem you can get the message when energy meter reading exceeds the desired threshold limit. You can also get the meter readings to your mobile as a SMS daily and corresponding electricity bill can be calculated if we have the formulae in Programming. You can control multiple electric appliances, by using different types of controllers with this proposed design.

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AUTHORS PROFILE



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