

Residency energy control system (RECOs) using wireless socket and IOT

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Abstract—In this paper the intelligent energy control scheme named as the residency energy control system (RECOs) is proposed and it is developed based on wireless smart sockets and IOT technology to minimize energy or power consumption of home appliances with using sensors. The RECOs shows control modes as automatic control, and overload concept, other concept as Geysers control, LED, FAN, Bulb control. The results show this scheme saves more amount of power consumption.

Keywords—RECOs, IOT, LED.

I. INTRODUCTION

The greenhouse effect energy saving is the one of the critical issues in designing the electronic appliances. The smart houses it is the house equipped with highly advanced automatic light systems, temperature controlling systems, security controlling mechanism and some other functions can be seen everywhere in the world.

The RECOs is basically based on wireless smart sockets and technology as

IOT technology, not only to monitor and control the power consumption but also to manage the energy consumption of controllable appliances.

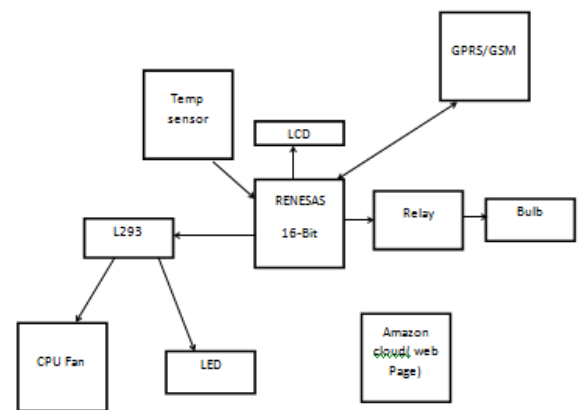


Figure 1.1 Block diagram

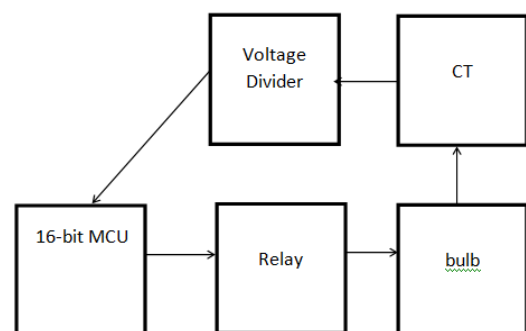


Figure 1.2 Block diagram for automatic control.

The RECOs is generally in its AC mode , according to output of module as the learning module, the AC module basically turns ON and OFF the power and energy of smart sockets for particular time periods. Besides, when total energy consumption or power consumption of a smart socket exceeds some limit as user defined limit, the module considering as AC module will usually receive request issued by PTC/ELC module and then accordingly somehow turn off those sockets as low priority smart sockets. The development of the internet technology as IOT, In such home management system a fix internet address as IP address is required and remote users usually need a high speed connection to access the system. The advantage is that user usually does not have to establish basically a high speed connection as internet connection before he/she can effectively manage and control home appliances.

II .Residency energy control

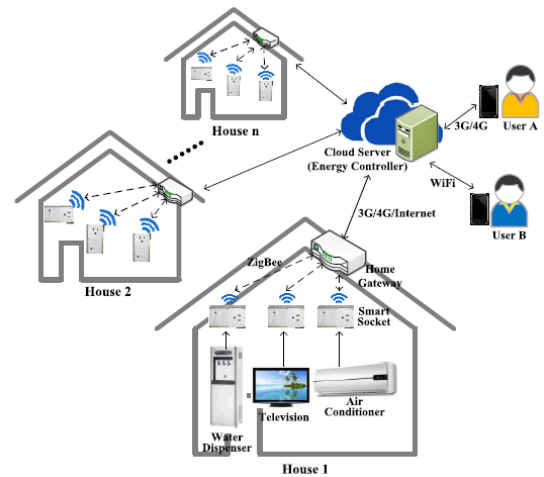


Figure 2.1 working procedure of the block diagram

Table 2.1 Temperature for geyser performance

Figure 2.1 shows With this scheme, users can be able to set up management policies to control home or residential energy and power consumption based on the time of a day. The main goal is generally to raising consumers energy consumption awareness

potentially inspiring them to be somehow more energy efficient. Some previous studies show improved functions of wireless socket or basically socket set

Temperature(°c)	Type	Time (sec)
< 30	Cold	20
>30 &<40	Normal	10
>40	Hot	5

up in a house and connected with wireless

network to control home appliances or residential appliances.

III .Design of Residency energy control

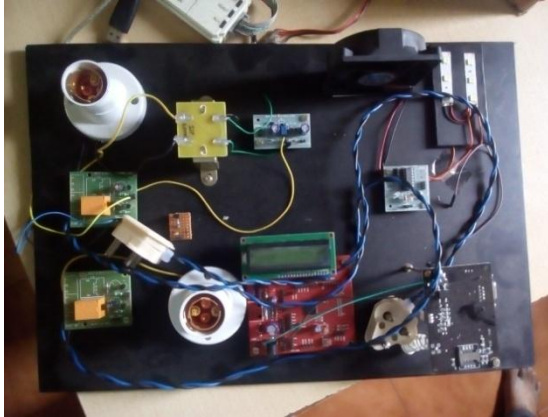


Figure 3.1 Kit components according to block diagram

A typical considering prototype module will be somehow developed for the project. Here the module used as renesas microcontroller module . It basically includes individual boards as PCB as printed circuit board as boards basically for all interfaces according to the block diagram. Every PCB will be generally inter connected with connecting wires as jumper wires. For time controlling as Peak time control it generally uses some of the set of relay and bulb for controlling as geyser control.

The Table temperture and oprating condition temperture and its type and

bssasically time Duration ,condition is as shown aabove table. For another controlling as a automatic control it will use a concept as a overload concept it countains CT as a current transformer and relay and also combination as bulb combination. If the load in the home or in the residency exceeds the load as optimum level load will automatically turns to off.

In another control as a automatic control it monitor the home appliances or residency appliances as bulb by OVERLOAD concept, if overload happens it suddenly get OFF. FAN, LED , Geyser control as other concept, the geyser try to ON and OFF according to mentioned temperture condition. The LED, FAN, Bulb can ON or OFF using wireless communication , the option to ON and OFF by using mobile phome, smart phone, laptop, desktop.

IV RESULTS

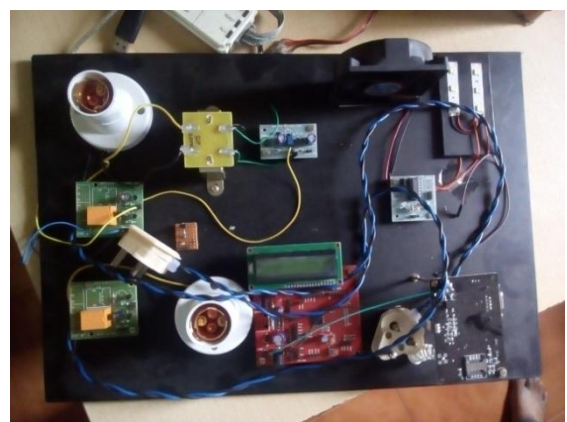


Figure 4.1 Kit componenets according to block diagram

The figure 4.1 shows all kit components are arranged according to the block diagram also using bulb sockets and components are connected through connecting wires as per requirement.

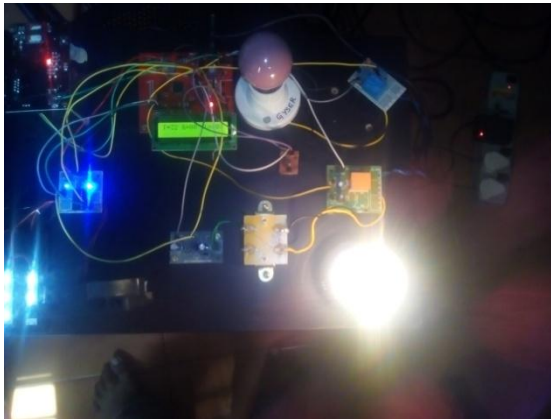


Figure 4.2 Test condition for the Kit components

As in figure 4.2 the Test conditions happens means the power supply is given to complete board , the all kit components get one time ON and OFF to show all components are ready to use or all components are working.

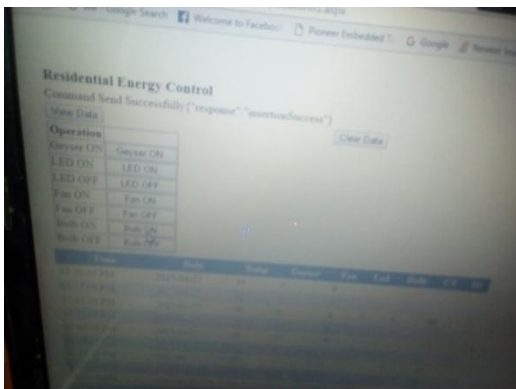


Figure 4.3 To turn ON and OFF for the LED, FAN Other Kit components.

From figure 4.3 This option as to turn ON and OFF the components as LED,FAN BULB, this option to turn ON and OFF components is also available in smart phone, Laptop, desktop.

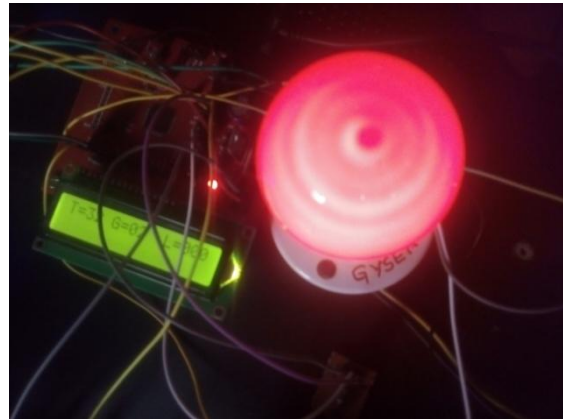


Figure 4.4 Geyser turns ON and OFF according to temperature sensor

Figure 4.4 Shows the geyser turns ON and OFF according to temperature condition as mentioned in table, geyser on for some seconds later it gets OFF.

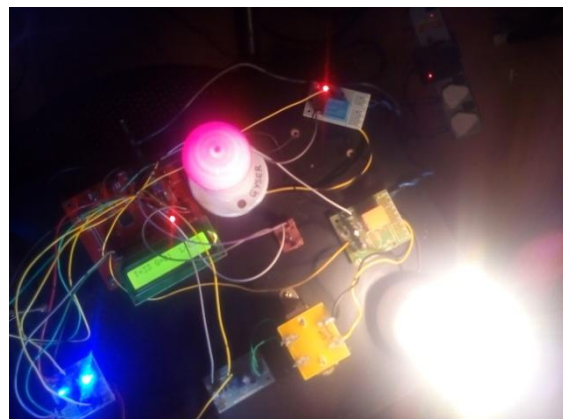


Figure 4.5 The 40 watt bulb for Overload concept

Figure 4.5 The 40 watt bulb if kept into socket ,the bulb gets ON, then geyser try to ON no Overload happens .here both geyser and bulb gets ON.

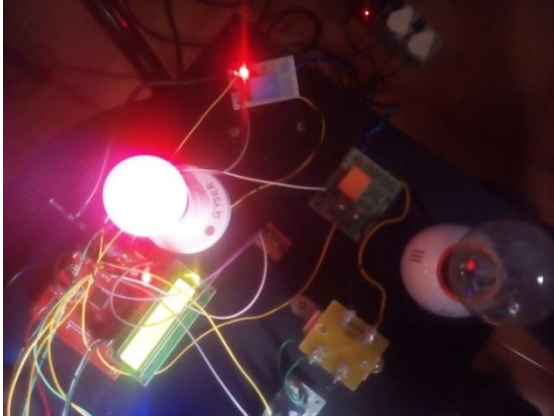


Figure4.6 The 60watt bulb for Overload concept

The figure 4.6 shows 60 watt bulb kept into socket gets on ,if the geyser try to on the geyser becomes ON ,suddenly the bulb gets OFF. This shows concept as Overload ,the LED display shows as Overload.



Figure 4.7 The 100 watt bulb for Overload concept

For figure 4.7 100 watt bulb shows overload concept happens, if 100 watt bulb kept into socket gets OFF, then geyser also

becomes OFF. This shows as overload happens.

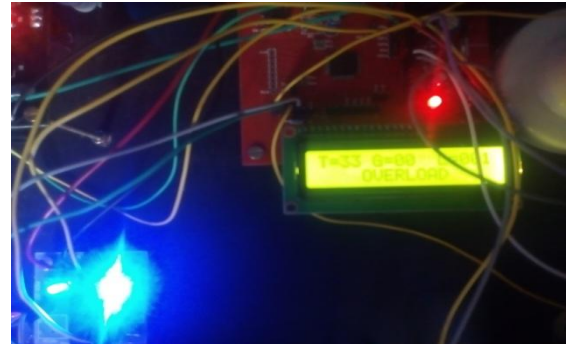


Figure4.8 Overload concept shown in LED Display

The figure 4.8shows LED display shows OVERLOAD happens and display as overload .The LED shows temperature option, Geyser operating condition option in display.

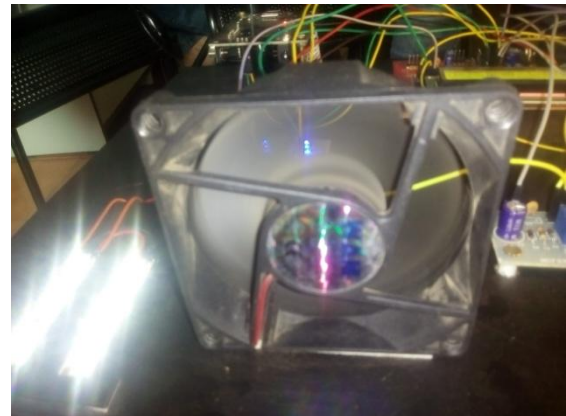


Figure 4.9 LED and FAN gets Turn ON

Figure 4.9Here the FAN and LED gets ON by turning ON button in the smart phone ,mobile phone, laptop, desktop .the Option to turn ON by Laptops ,smart phone.

This work	Reference 4 May 27,2016	Reference 5 Jan 2015
Sensor(temperature sensor) used for Geyser control concept. (According to temperature condition it works)	No sensor used	No sensor used
OVERLOAD Concept as automatic control concept used.	No OVERLOAD concept	No OVERLOAD concept
LED,FAN ,Bulb turns ON and OFF through wireless communication.	No GPRS(SIM) concept	No GPRS(SIM) concept.
Using smart phone, laptop the FAN ,LED light can Turn ON and OFF.	No use of smart phone	No use of smart phone

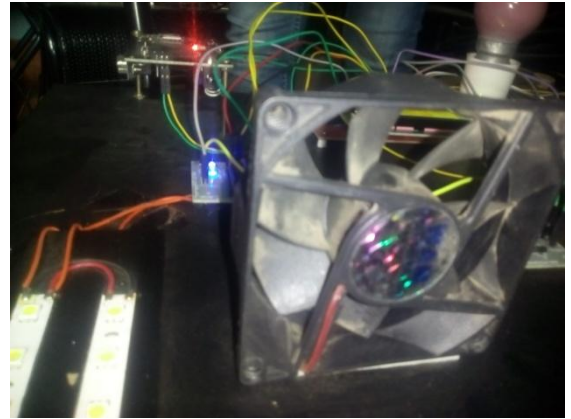


Figure 4.10 LED and FAN get turn OFF

The figure 4.10 shows FAN ,LED gets OFF by turning OFF button .This is done through wireless communication.

Table 4.1 comparison from other

V CONCLUSION

A simple technology as IOT technology which integrates wireless smart sockets home gateway energy controller ,Zigbee. Most importantly the RECOs uses sensor , Other appliances can also save some amounts of energy.

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