International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 05 | May 2019 www.irjet.net p-ISSN: 2395-0072

RTC BASED LOAD MANAGEMENT SYSTEM

Sapkale Ashwini[1], Avhad Renuka[2], Prof.K.P.Varade[3]

[1]*Student ,Departement Of Electrical Engineering,SVIT Nashik, Maharashtra,India*
[2]*Student ,Departement Of Electrical Engineering,SVIT Nashik, Maharashtra,India*
[3] *Professor, Department Of Electrical Engineering, SVIT Nashik,Maharatra,India*

Abstract - In RTC based load management we can handle the output loads and save the energy. A real time clock(RTC) is a computer clock(most often in the form of an integrated circuit) that keeps track on the current time. Although the term often refers to the devices in personal computers, servers and embedded system, RTCs are present in almost any electronic device which needs to keep accurate time. load management ,also known as demand side management , is the process of balancing the supply of electricity on the network with the electrical load by adjusting or controlling the load rather than the power station output. this can be achieved but direct entervention of the utility in real time, by the use of frequency sensitive relay triggering the circuit breakers, by time clock or by using special tariffs to influence consumer behavior. Load management allows utilities to reduce demand of electricity during peak usage times, which can, in turn reduce costs by eliminating the need for peaking power plants. There are three single phase and one three phase load is used in this project Single Phase loads:- 1.Factory Lights 2. canteen light 3.Street light Three Phase Load:- 1.Three phase motor The main aim of the project is to save the energy.

***Key Words*: real time clock, microcontroller,diodes, buzzer, relay.**

1.INTRODUCTION

Electric utilities load shed when there is huge demand for electricity exceeding supply or if power generated is less than the consumers demand, the need to shed load is eminent in order to avoid total breakdown of equipment's used by power distribution companies as a result of overloading effect. So, this concept is about automatic load management system for optimized and automatic load shedding. In RTC based load management we can handle the output loads and save the energy. A real time clock (RTC) is a computer clock(most often in the form of an integrated circuit) that keeps track on the current time. Although the term often refers to the devices in personal computers, servers and embedded system, RTCs are present in almost any electronic device which needs to keep accurate time. load management ,also known as demand side management , is the process of balancing the supply of electricity on the network with the electrical load by adjusting or controlling the load rather than the power station output. Load management allows utilities to reduce demand of electricity during peak usage times, which can, in turn reduce costs by eliminating the need for peaking power plants.

1.1 Problem Identification

This design is focused on time management automatic load shedding system, its aim is to automatically switch ON/OFF different load distribution lines multiple number of times. This system is takes over the manual task of switching ON/OFF of power distribution lines with respect to time this way load is shared to different areas or regions with respect to time as it helps to define user load priority and groups. The system uses real time clock (RTC) interfaced to an Arduino UNOAT89s52 series microcontroller, while the set time equals the real time, the microcontroller gives command to the corresponding relay to turn ON the load and then another command to switch OFF as per the program. Multiple ON/OFF time entry is the biggest advantage with this Concept. Push button switches are being used in this project to set up the control and also used to enter the ON/OFF time. A liquid crystal display (LCD) is interfaced to the microcontroller for displaying every information needed to setup the device.

1.2 Scope

Global competition, limited resources and environmental protection will have a decisive influence on developments in automation technology. Safety concepts are changing: New requirements in machine and plant. construction give rise to new sensor solutions. In the future, increased technological demand is expected from the Far East, in particular from China. There is a growing trend towards a higher degree of automation and extended functionality like automatic power management. In addition to conventional sensors, vision systems and vision sensors will also increase in popularity. In this project one can control all their power grids through mobile and also set the priorities, this design can be more advance by using the IOT (internet of things) concept. Modern sensors will play an increasingly important role with regard to reliability and protection of investments. This project can be made more advance according to the application and all the flaws will be possibly become negligible using advance techniques

2. METHODOLOGY

In RTC based load Management system we can manage single phase as well as three phase output loads with the help of 89s52 microcontroller. Main component of this system is 89s52 microcontroller. Along with microcontroller there are

few interfacing devices which is connected to microcontroller. They are listed below , 1) Keyboard 2) LCD (Liquid Crystal Display) 3) Buzzer 4) RTC (Real Time clock) 5) Relay Now how interfacing devices work with controller that is defined below, When System is Powered up or shut down the buzzer will make noise for few seconds so we can easily understand the system is turn on or off. When system is powered up first we have to set the time of operation with the help of Keyboard . Whatever input given by keyboard is get displayed on LCD. After setting time operation the RTC will Count the time, when time finishes RTC will give the signal to controller. Based on the signal of RTC microcontroller will turn on or off the relay so connected load get automatically turn on or off. Microcontroller operates the relay with the help of ULN2003 Circuit. This circuit is required because the voltage required to operate relay is not sufficient so ULN2003 circuit is connected between controller and relay which will provide the sufficient voltage to operate relay.

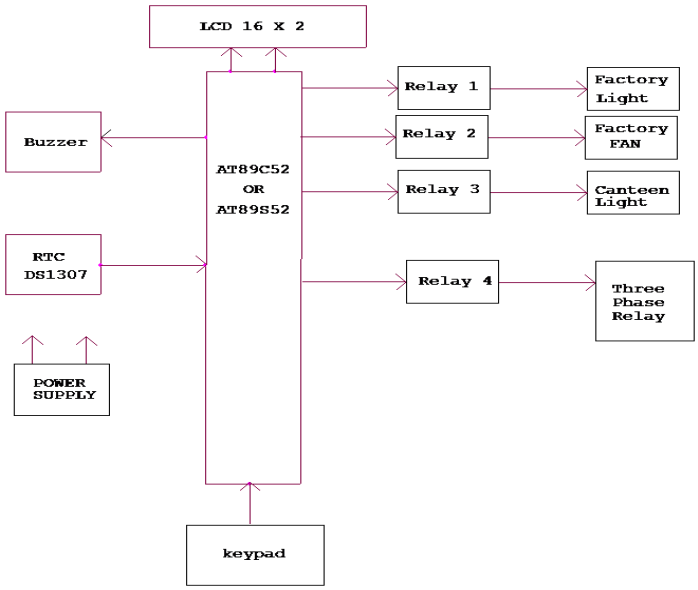

Fig -1: Block Diagram Of Rtc Based Load Management System.

3. CONCLUSIONS

In this project, with the help of microcontroller AT89s52,We can handle the light, fans, three phase motor, streetlights. In a OFF period, lunch time, or factory's , holidays, some equipments may be ON. With the help of this project we can handle all equipment using PC and Microcontroller. It is the best way for energy conservation and we can save the energy. It direct affects on our monthly electricity bill.

ACKNOWLEDGEMENT

I take this opportunity to express my profound gratitude and deep regards to my guide **prof. Mr.K.P.Varade** for this exemplary guidance, monitoring and constant encouragement throughout the course of this thesis. The blessing, help and guidance given by her time to time shall carry me a long way in the journey of life on which I am about to embark.

I have taken efforts in this seminar. However, it would not have been possible without the kind support and help of many individual and organization. I would like to extend my sincere thanks to all of them.

I am highly indebted to entire Electrical Department faculty members for their guidance and constant supervision as well as for providing necessary information regarding the report & also for their supports in completing the report. I would like to express my gratitude towards my parent & my colleagues for their kind co-operation and encouragement which help me in completion of this report.

REFERENCES

[1] Divyansh Mathur, —Maximum Power Point Tracking with Artificial Neural Network‖ . International Journal of Emerging Science and Engineering (IJESE) ISSN: 2319–6378, Volume-2, Issue-3, January 2014.

[2] C.T Hsu,M.S.Kang and C.S Chen —Design of adaptive load shedding by artificial neural networks.‖ IEE proc.-Gener. Transm. Distrib., Vol 152,No.3, May 2005.

[3] Testsuya Kakkonda, Eiichi Tsukada. —Electrical load forecasting by Neural Networks Considering Various Load Types‖. IEEE Intelligent system ISAP 2003

[4] International journal of scientific & technology research volume 5, issue 01, january 2016 issn 2277-8616