Automatic Load Management System by Using Consumed power Measurement

Prof. JAMDADE A.S.
Assistant professor, Department of Electrical Engineering, Dnyanshree Institute of Engineering & Technology, Satara

Ms. Mayuri M. Kochale, Ms.Ravina G.Kochale, Ms. Ritika H.Gaikwad,Ms.Pratiksha D.Shingate
Students, Department of Electrical Engineering, Dnyanshree Institute of Engineering & Technology, Satara
mayurikochale216@gmail.com

Electrical Engineering Department

Dnyanshree Institute of Engineering & Technology, Sajjangad Road, Satara

1.ABSTRACT :-

Change is a need for time and automation in systems is a change that is the need of the 21st century. There may be an increase in load or occasional outflows from the industry. In this project we suggest that load management begin with the use of automation techniques. The proposed system has its own mandate to provide effective load management to address power outages and provides a very important new method that indirectly reduces the human capacity specifically needed to direct applications. The critical load control system is designed to achieve full power control over system load and battery storage, and as a result provides efficient management and ensures critical power supply, by considering industrial applications the system enables them to reliably, at least, use electrical equipment to operate automatically. and power outages.

Keywords :- Load , voltage, Automation, Power, Supply, Load Mechanism

2.INTRODUCTION

Frequency and voltage stability is the most important factor in the performance. The instability of such parameters poses significant threats to system security. Defects such as short circuit, load growth and generation shortages may affect voltage and frequency. Such instability leads to a complete shutdown of the system. Mostly research in this area has focused on power forecasting depend on cost and time. Electricity generation instability is one of the major obstacles to this approach. The proposed approach

will overcome this problem by arranging the load based on demand. In this way, planning provides the consumer space instead of power plants i.e. good energy planning depends on the load.

The total load on the system is the total load required by all regions and losses. If any region requires additional power to meet the load requirement, the system evaluates the regions for their maximum load. Electricity and current must be measured using current and current sensors. This comparison helps us to find the smaller units needed and to organize the load in the required area. The system never interrupts a power source. In this project we suggest that load management begin with the use of automation techniques. There may be an increase in load or rarely outflows from the industry. We can first assign a responsibility according to its circumstances, limitations, and importance. We use this key in selecting and loading which will be used for rotation.

This default purpose is satisfied by the default load setting. We will use a five-relay drive circuit connected to the AVR ATMEGA328 Micro controller. We predict the importance of the system and accordingly it first empowers the load. The main objective of the project work is to reduce the cost of generating electricity and to make available energy where it is needed without distortion in order to obtain the effective power required for the heavy load required in the application.

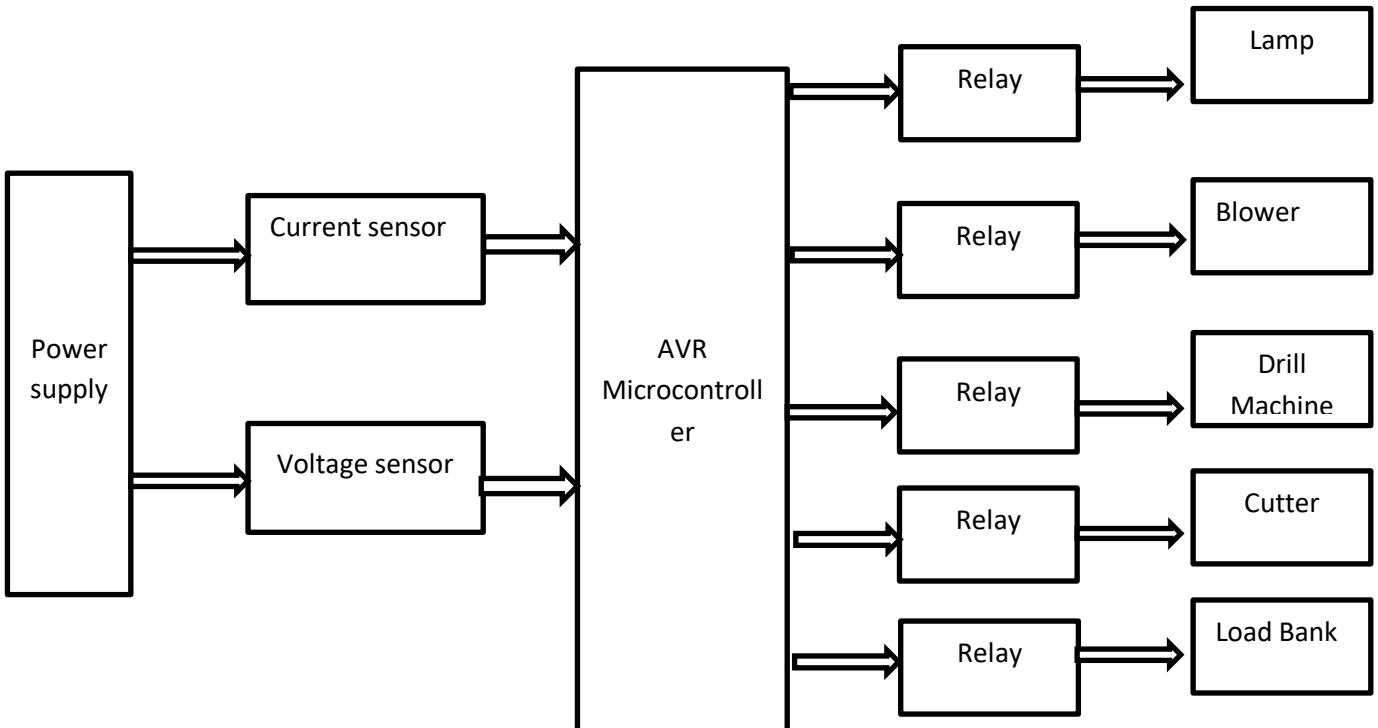

Figure2.1: Block Diagram of Automatic Load Management System.

The design of the various units of the system built up, the theory of operation of the devices used and their operations are considered. The design is based on the availability of the components for the system

realization. The overall system consists of five modules . The power unit supply is regulated ac input i.e 230 volt from the main supply is step-down by transformer and The output obtain from rectifier is dc voltage i.e. +5v. The second stage is the sensing unit. This unit uses a current sensor and voltage sensor to monitor the load current at a maximum 230A load. While the potentiometer is used in selecting the maximum power for the load demand. The third stage is the control unit. The control unit act to activate the whole output, when detect the load current from sensing unit, the Microcontroller AVR ATMEGA 328 employs to perform the operation of the project, whereby it will act as a central controller of the entire project circuit. The fourth stage is the load control unit.

This unit serve to control the AC load, disconnect the overload occur and connect the load within the range. The relay acts as a switch there for driving the AC load. The final stage is a display and alarming unit. The unit displays the operational result of the project, and alarming circuit for alerting when overload occur. The display unit uses a liquid crystal display while alarming unit uses a buzzer. IOT system with smart techniques for electrical load management which is intended to gain advanced control and minimize costs. IoT is also used to make this demand side management smart by providing an interface for consumers.

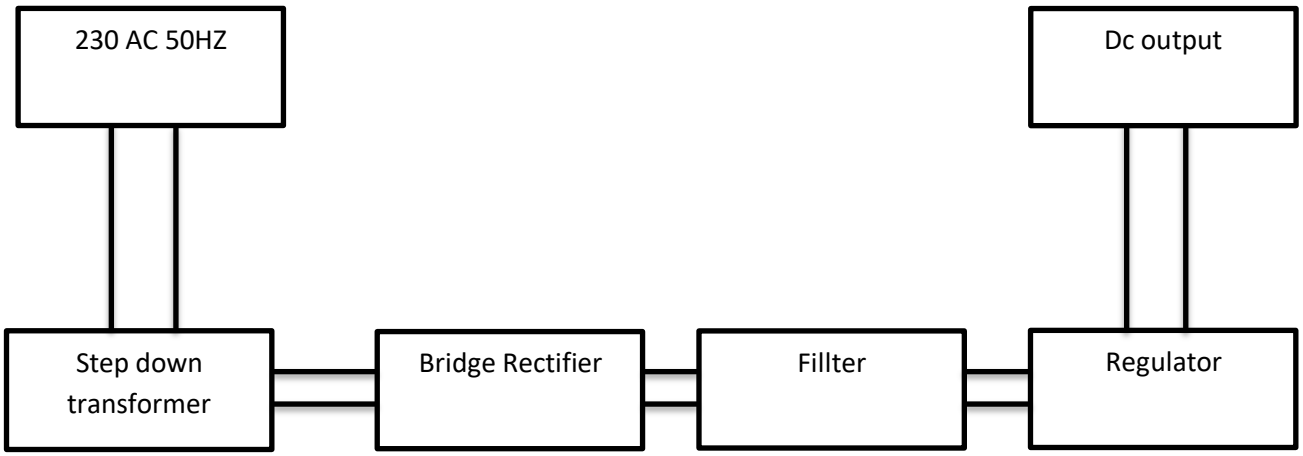

FIG 2.2 Block Diagram of Power Supply.

The input to the circuit is applied from the regulated power supply. The AC input i.e., 230V from the mains supply is step down by the transformer to 12V and is fed to a rectifier. The output obtained from

the rectifier is a pulsating DC voltage. So in order to get a pure DC voltage, the output voltage from the rectifier is fed to a filter to remove any AC components present even after rectification. Now, this voltage is given to a voltage regulator to obtain a pure constant dc voltage.

3. SYSTEM DESIGN

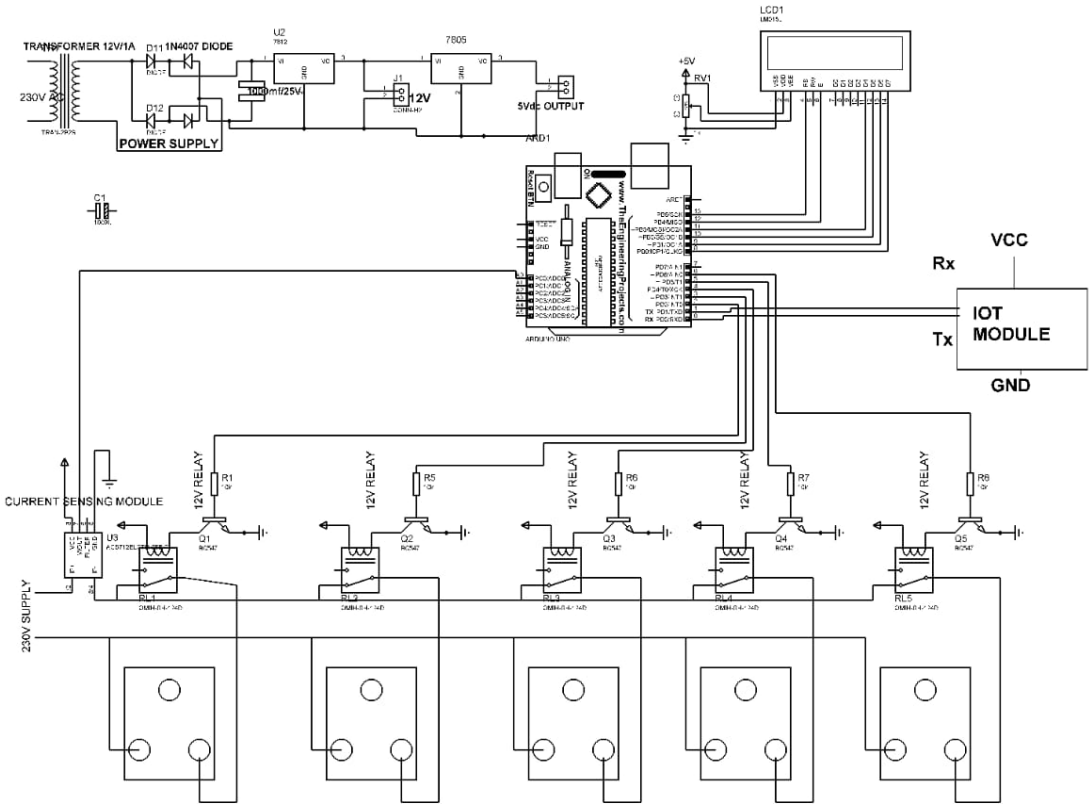

Fig. 3.1 Circuit Diagram of Automatic Load Management System.

3.1 WORKING :-

This project is basically designed to protect industrial electronics against overcrowding in this project we have connected specific loads to the system where the power supply this power supply is loaded with the current sensor so by using the current sensor we can measure the current flowing through the power line loading this data will be supplied with AVR ATMEGA328PU and from these current and current levels will calculate the total amount required or use the power of the system after which the system will calculate the estimated load and load specified when the load exceeds the maximum and then discharges other loads as specified in 2 system and thus will distribute the

appropriate load . in overloading of any device to make the system more advanced we connect the iot module to this system as we know that iot is the internet of the system where data is sent to inte rnet or received online our system is connected to an internet server with this module. iot and in this way the data generated by the system is sent to the iot mobile app where the user can easily read the data values such as the current voltage and power used by the system how many loads are loaded and in case of overload and this system will issue a warning to the user's cell phone. about the load connected to the power system used. load and in any case where overcrowding occurs he will be notified by his cell phone in this way the complete system works.

3.2 SIMULATION :-

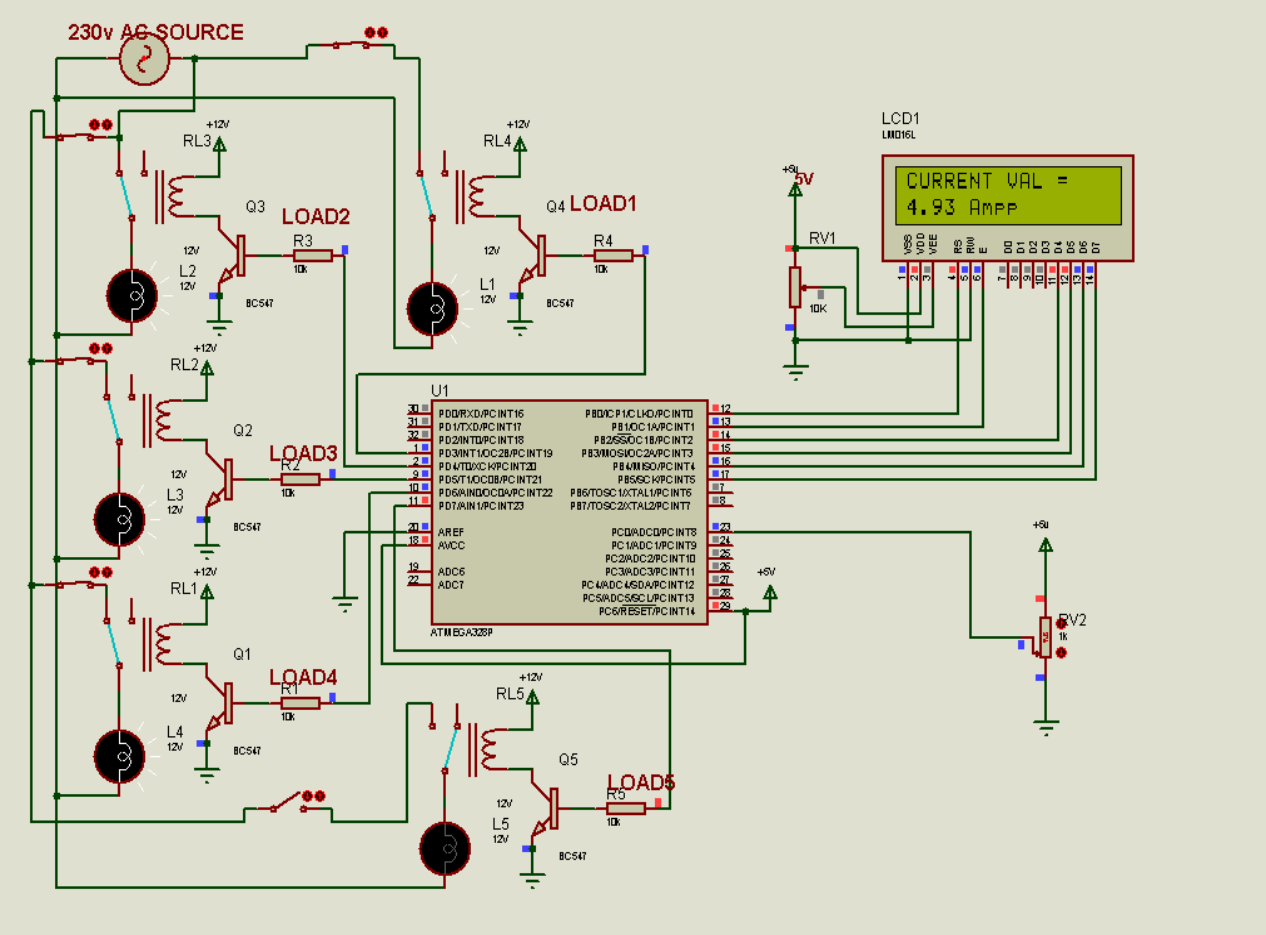

FIG 3.2 Simulation Circuit of Automatic Load Management System

4 . CALCULATION TABLE

SR.NO	LOAD	V	I	Watt	Condition

1.	When load resistive lamp	272	1.02	278	Load are ON
2.	Resistive Lamp+Blower is ON	264	3.23	850	Both Load ON
3.	Resistive Lamp+Blower+Drill Machine is ON	248	4.50	1117	All Loads are ON
4.	Resistive Lamp+Blower+Drill Machine+Cutter	244	4.59	1119	Resistive Lamp(200w) is OFF
5.	Lamp+Blower+Drill+Cutter+Load Bank	240	5	1200	Only Excessive Load is ON

5.RESULT

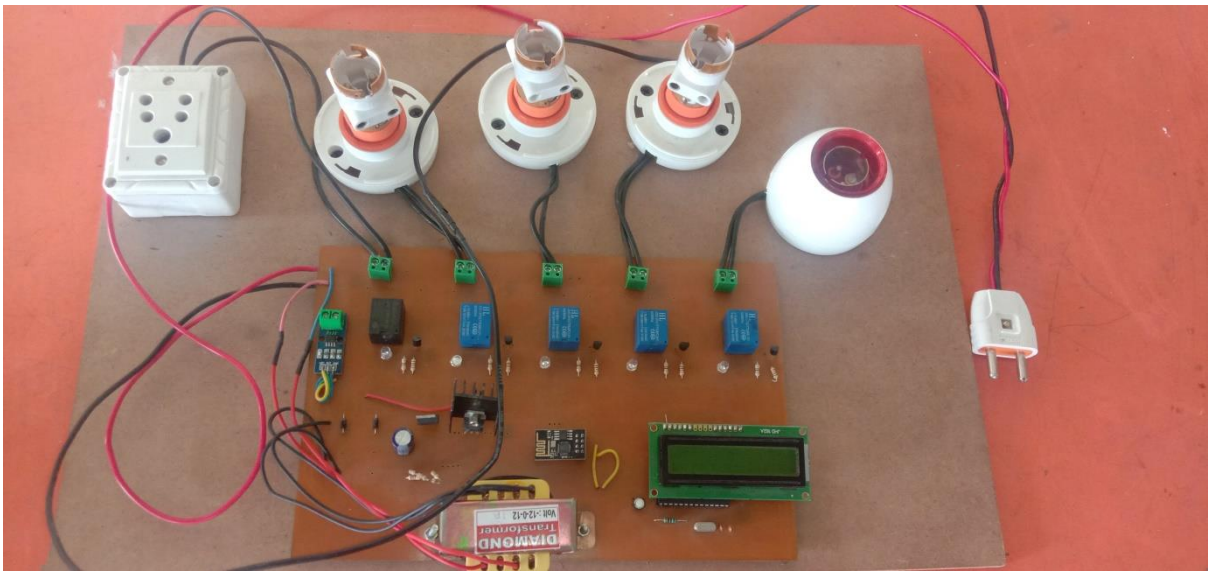

FIG 5.1 Automatic Load Management System.

In this project we work on the automatic load management system. In the circuit consist of five loads .For The communication between utility and consumer is done by using micro controller . programming

was done by using programmers arduino software and was entered to the micro controller.The aim of my project is over load is divided in to various section and they were assigned priorities. This sections were cut during load shedding according to their priorities.

6.CONCLUSION

The applications of good plant quality and demand control concepts required an understanding of utility rates, auditing and metering in addition to a basic knowledge of the process and load being control. Energy consumption and power quality mitigation are significantly enhancing the power system operation. Electric utilities want to reduce the load during the peak hours and encourage the user to use appliance in off- peak hours to manage the load between supplies and to avoid unscheduled load.

7. FUTURE SCOPE

This Project could be further extended in which the distribution point can be monitor by one central location. In this system to read remote electrical parameters user can send commands to concerned DP.

This system can send the electrical parameter data like active power, reactive power, current(I), voltage(V), frequency etc. by in the form of Short Message Service.

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