

ENERGY SAVING THROUGH AUTOMATIC SEQUENTIAL SWITCHING OF APPLIANCES

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Abstract - The break neck development of human lifestyle increases the dependency of human beings on the electrical appliances and this leads to increase in environmental pollution and global warming due to the harmful gases emission from the generation power plant which results in depletion of ozone layer and have adverse effect on the environment and human being as well as on animals and plants.

It will become a critical issue to protect our environment and atmosphere from increasing global warming and environmental pollution. It is high time that we should take proper action to save our atmosphere.

Our project helps in the reduction of energy consumption and restrict the unnecessary wastage of energy hence this project will prove to be a great step towards the welfare of whole atmosphere and all living beings.

In our project we have done the automatic sequential switching of appliances which can be very helpful in saving the energy and prevent unnecessary wastage occurs due to the inattention and negligence of human being.

We are providing three modes for the comfort of user.

1. First is Bluetooth mode which help in controlling the load with the help of mobile phone within the range of Bluetooth.

2. Second is the Arduino UNO mode which helps in automatic sequential switching of appliances on the basis of prefaded program.

3. Third is the direct mode, in this mode we can able to control load by direct switching.

For Reducing losses and protecting our instruments due to overheating we have provided temperature protection which help in shutdown whole system if temperature of devices increasing beyond a fixed temperature.

INTRODUCTION

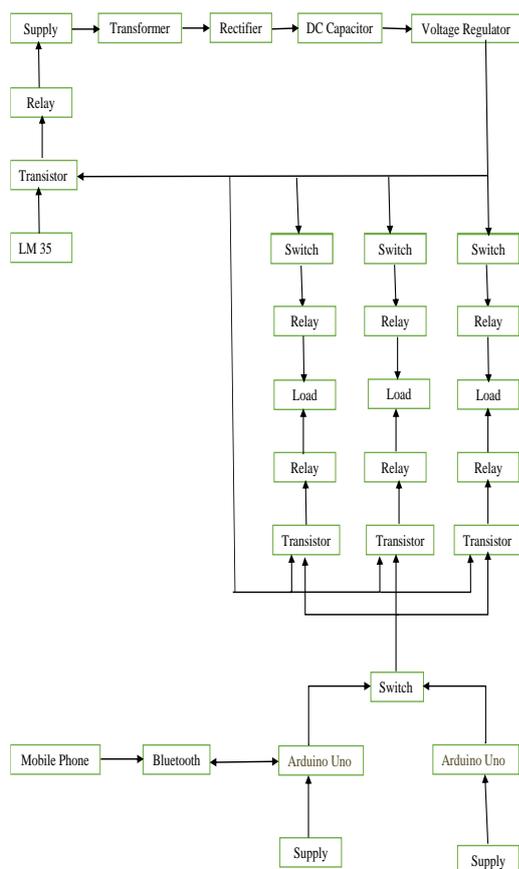
Today electricity plays a vital role in the development of a nation. Dependency of human on electricity in increases day by day.

Electricity can be generated by conventional and non-conventional energy resources. Coal petroleum and natural gas account for about 90% of world's production of commercial energy. The energy generating station emit harmful gases which are responsible for global warming and environmental pollution.

Therefore it is over responsibility that we should save the energy for protecting our atmosphere and our environment.

The aim of our project is protecting our atmosphere by saving the energy by reducing the unnecessary wastage of energy due to inattention and negligence of human being. It is well said that "ELECTRICITY CONSERVED IS ELECTRICITY GENERATED". This is the main motive to select this project.

BLOCK DIAGRAM



WORKING METHODOLOGY

Here firstly we have to step down the 230V supply by the help of 9 - 0 - 9 transformer, after getting the desired AC voltage we rectifies it into DC with the help of the full bridge rectifier here we have quarter watt diode to make a full bridge rectifier.

After that with the help of the DC capacitor we filter the voltage from the spikes and ripple to a pure DC. Also we use a voltage regulator to maintain a specific voltage after getting this desired DC voltage. We use this DC voltage in the four different modes parallel, these modes are -

1. Manual Mode

The voltage supply coming from the voltage regulator is directly given to the three different switches and with the help of the switches, we excite the different relays and these relays switches the load.

2. Bluetooth Mode

The voltage supply coming from the voltage regulator is directly given to the three different transistors which work as switches. Here we have use a LM05 Bluetooth receiver model. When we

will send a Bluetooth signal in the digital form with the help of mobile, the LM 05 model catch the signal and transmit the signal to Arduino. Also this Arduino give the power supply to LM 05 Bluetooth receiver model. After getting this digital signal from the LM05, Arduino transmit the signal to the transistor in the analog form, this analog signal biased the transistor and then transistor passes the main supply to the relays, these relay switches the load.

3. Sequential Mode

The voltage supply coming from the voltage regulator is directly given to the three different transistors which work as switches. Now the Arduino is given a supply and we have program the microcontroller in such a way that it biased the different transistor after a specific time and these transistor passes main supply to different relays one by one and these relay switches the load.

4. Temperature Control Mode

A final mode of our project in which the whole of the circuit, control by temperature in our project. We have installed a LM35 temperature sensor, it sense the temperature in the whole system and as the temperature increase as the specific limit, the LM35 send the signal to the transistor and this signal biased the transistor and passes the main supply to the relay and this relay cut the main supply of the system. Further when the temperature decrease the LM35 urges the relay to again on the supply power in the circuit and the system works properly.

ADVANTAGES

1. To save the energy by sequential switching of appliances.
2. To save the equipment's from getting damaged by the heat produced in them with the help of temperature protection.
3. Increases efficiency of system.
4. System can be operated in various mode according to user requirement (sequential mode, Bluetooth mode and manual mode).

COST ESTIMATION

COMPONENT	RATING/QUANTITY	TOTAL COST
Arduino UNO	900A/2	800
Temperature sensor	LM35/1	250.00
Diode	1n4007/4	20.00
Bluetooth	HC05/1	350.00
Transformer	220V,9-0-9V/1	150.00
Voltage regulator	L7809CV/1	75.00
Transistor	NPN-547/4	40.00
Relay	6V/7	350.00
PCB	1	50
Switches	5	100.00
Capacitor	2400microfarad/1	20.00
Load	10watt/3	120.00
Wires	20	300
Adaptor	1	350.00
Glue gun	1	250
Basement	1	250.00
Soldering machine	1	200
Total amount		3325.00

CONCLUSION

Energy saving through automatic sequential switching of appliances project is successfully built with so many features in it. It can perform different mode of action such as sequential mode, manual mode, Bluetooth mode, temperature protection mode. This project is able to save an energy by using a different types of mode as per user reliability.

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