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Auto Power Supply Control From Different Sources To Ensure No Break Power

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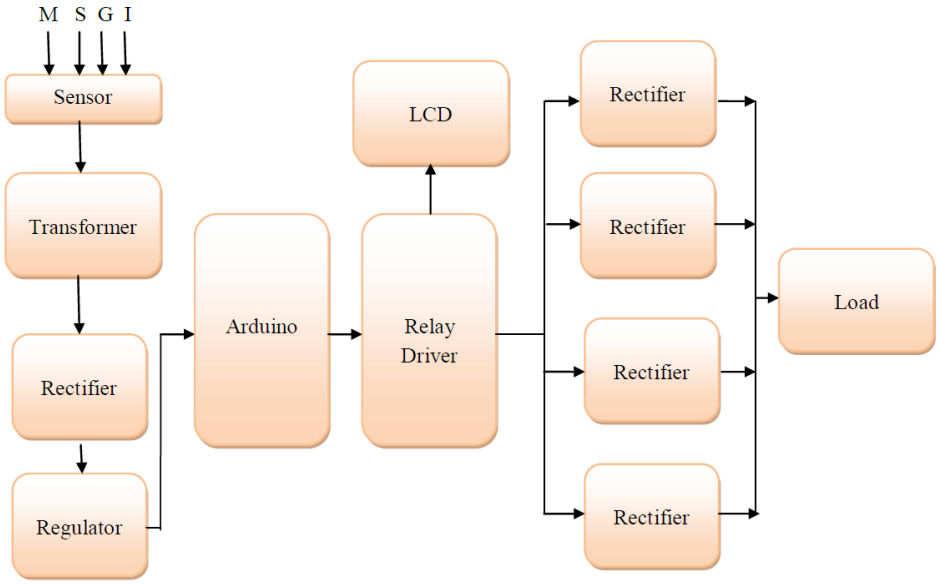
Abstract — *Power is most important requirement for all of us. We know that due to large demand of electricity and due to limit capacity of power plant at generating station, power cut off is common for all us. Due to limited amount of power generation at power station and due to shortage of nonrenewable continuous supply source it beings a biggest challenge in whole world. If you see all around us you will observe that due to discontinuity of power supply, many problems have been faced by people in their everyday use. This type of power failure create problem for data centers, hospitals and some research work. This is a biggest reason that every countries are researching for the work to supply a continuous power with good efficiency and with good regulation. In this project we can combine the renewable and non-renewable energy sources to get the continuous power supply such as mains, solar, inverter, small diesel generator .The power cut of this sources can be manually done by switches. The continuous supply to load can be given by automatic operation of relay, relay driver IC with the help of Arduino microcontroller.*

Keywords- *Auto Power Supply Control, Uninterrupted Power Supply, Automatic Power Supply Change Over Switch*

I. INTRODUCTION

The main objective of this project is to provide uninterrupted power supply to a load by selecting the supply from any source out of 4 such as mains, solar, inverter, and generator automatically in the absence of any of the source. The demand for electricity is increasing every day and frequent power cuts is causing many problems in various areas like houses, industries, and hospitals. An alternative arrangement for power source is a must. In this project uses four switches to demonstrate the respective failure of that power supply. When any of the switches is pressed it shows the absence of that particular source. Switches are connected to microcontroller as input signals. A microcontroller of Arduino family is used. The output of microcontroller is given to the relay driver IC which switches appropriate relay to maintain uninterrupted supply to the load. The output shall be observed using a lamp drawing power supply from mains initially. On failure of the mains supply (which is actuated by pressing the appropriate switch) the load gets supply from the next available source say a solar. The block diagram is shown in fig.1. In block diagram M,S,G and I indication are used for Motor, Main Supply, generator and Invertors accordingly.

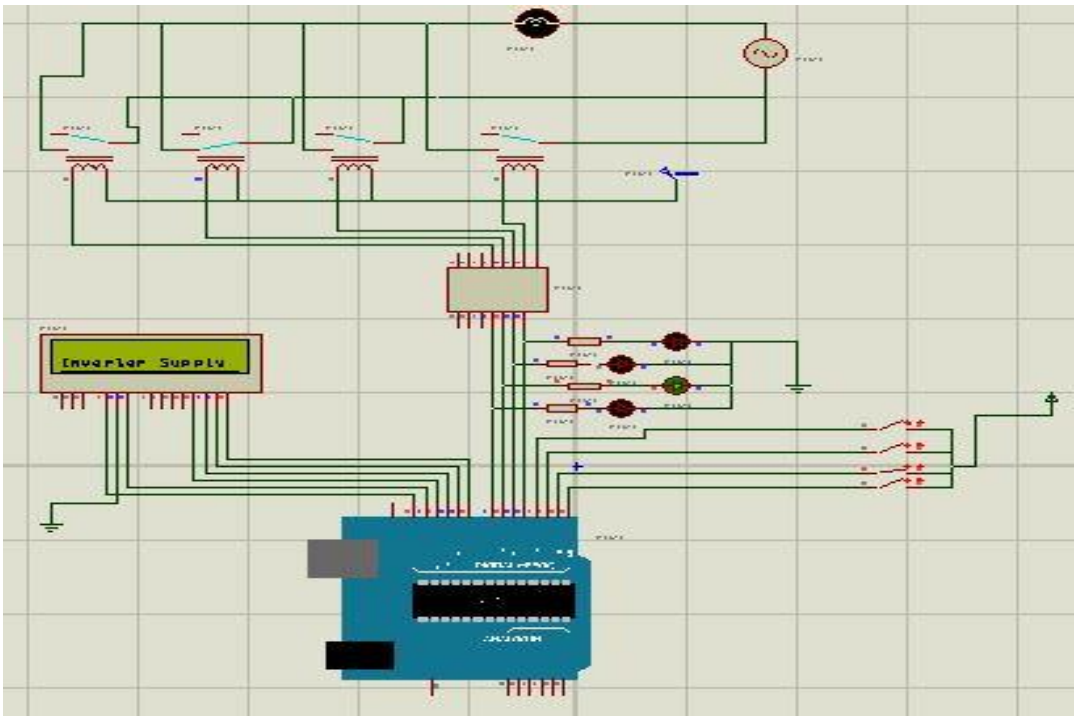


"Figure 1. Block Diagram"

II. OPERATION & SIMULATION RESULTS

As per Block Diagram shown above our mains supply power i.e. 230 V AC is converted to 12 V AC by transformer. After that AC Power is converted into DC by Rectifier and then voltage regulator will produce fixed 5 V DC and it is given as input to Arduino microcontroller and it will operate relay with the help of relay driver IC and the load can be operated so as we can say it as uninterrupted power supply. In this project we use four switches to demonstrate the respective failure of that power supply. When any of the switches is pressed it shows the absence of that particular source. Switches are connected to Arduino microcontroller so as to provide input signals. An Arduino microcontroller of microcontroller family is used in our project. The output of microcontroller is given to the relay driver IC which switches appropriate relay to maintain uninterrupted power supply to the load. The output shall be observed using a lamp drawing power supply from mains initially. On failure of the mains supply (which is actuated by pressing the appropriate switch) the load gets supply from the next available source say as solar. If the solar also fails it switches over to the next available source and so on by inverter and usually generator instantaneously. The current status so as to which the source supplies the load is also displayed on an LCD. As it is not feasible to provide all four different sources of supply, one source with alternate switches is provided to get the same function.

2.1 SIMULATION RESULTS



"Figure 2. Simulation of Design in Software"

III. CONCLUSION

In this paper, the Automatic change over switch with power starting/shut down facility has been designed to help man reduce the stress and loss of time associated with the starting and shutting down of the alternative sources of supply. It is worthy to note that this design is subject to scrutiny and further development. In future development of an overload protection system can be included. We also recommend this design to the entire field where electricity is highly needed and even to the small and medium entrepreneur that the automatic change over switch with power starting/shut down facility will help them.

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