IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

AUTO POWER SUPPLY CONTROL FROM THREE DIFFERENT SOURCES

#Jenyfal Sampson *G. Arunsai Kumar, *C. Balaji Dileep, *G. Vinay Kumar, *B. Venkata Kiran
*Department of Electronics and Communication Engineering
Kalasalingam Academy of Research and Education, Krishnankovil, Tamil Nadu, India.

ABSTRACT: *The main aim in designing our project is to provide continuous power supply for the load with the three different sources (Mains, Solar, Generator). No person is needed to pick any available source to supply to load. During this system, the AC mains is employed continuously as supply to the load, if by some cause AC mains power supply fails then load gets supply from Solar. We are using generator as third option of power supply to take care of continuous power supply. When three sources are failed to supply the power to the load then we will get intimated by buzzer.*

Keywords: Micro-controller (8051), Generator, Solar, LCD, Buzzer.

I. INTRODUCTION

The demand for power is rising day by day. As most of work depends on electricity, which causes loading effect on electricity distribution. Due to regular electricity cuts creates tons of troubles where we need continuous electricity required such as- Banks, Clinics, and Companies.

If power supply cuts are happened regularly then industries, hospitals etc. got many troubles. The system in use now each day is especially on AC Mains and any available source but in industries preferably generators are used . When mains supply revisit then this is often necessary to show off generator. This causes delay in processing so there's need of continuous power supply.

Problems in regular system:

In regular system we used to provide supply for load is, especially the mains. In industrial application we use mains, solar and generator. In domestic application we use mains and solar. But there's high load on mains. So, the load does not get continuous power from the source which ends up in stopping of the system until source is out there. This unnecessary breaking creates delay within the system, also the utilization of non -renewable sources is increasing day by day. Hence the modification within the system is extremely necessary.

Problem Solution:

A substitute arrangement for electricity supply may be a must, so there's need of continuous power supply. the main aim of this design is to supply continuous supply to a process which needs continuous power by picking the availability source from any source out of the three like – Ac mains, solar and generator.

In this system the AC mains is employed continuously as supply to the load, if by some cause AC mains power supply fails then load gets supply from Solar. We are using generator as third option of power supply to take care of continuous power supply when solar power unable to supply energy i.e., in season and in the dark. When Solar is not in use as power supply to the load, the energy of Solar is given to the Inverter to charge it. When Solar fails the load gets supply from Inverter. When AC mains supply is out there during any of another source in use then it switches to mains supply i.e., the load gets supply from mains.

Objective:

1. To provide an uninterrupted power to the load. This supply is provided by 3 sources such as: Alternating current mains(AC mains), solar, generator.

2.Among these the available source is given to the load as supply. AC mains supply is continuously provided. If it fails then load fetch supply from next alternative i.e., Solar.

METHODOLOGY:

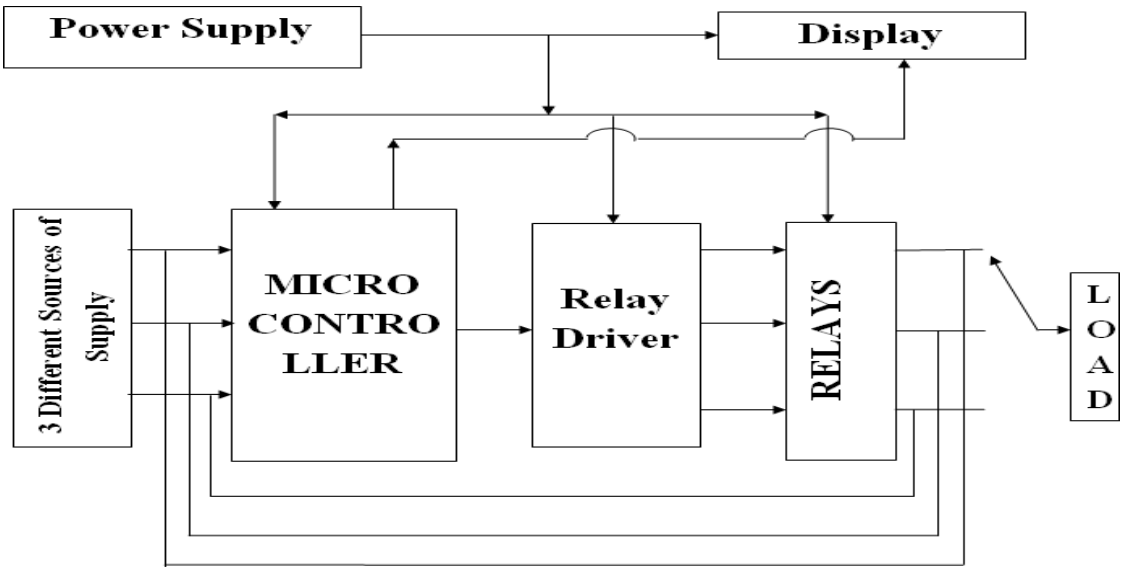

Fig. 3.1 Main Block Diagram

Description:

In this project design, 3 sources are provided to microcontroller (8051) as follows in block diagram. To provide continuous supply for the load. The output of microcontroller (8051) is connected to relay driver (ULN2003). The relays used here are 12V. The output is often observed by load which is obtaining uninterrupted power supply from any available sources if main supply fails. The design contains a stepdown transformer 230/12V, which covers the voltage to 12V AC. Bridge rectifier is used to convert into DC. The noise is removed by employing a capacitive filter. After filtering the power is adjusted to +5V using a transformer and 7805 regulator IC which required for the operation of the micro-controller and other components in the design. Also, the available source is displayed on LCD. The three primary components for providing electricity using solar energy, AC power for daily use is: Solar panels, battery, and inverter.

.DESIGN AND IMPLEMENTATION:

Hardware and software are two main aspects of the planning. The system is usually counting on micro controller. Here the microcontroller 8051 is employed. Low time required for performing operation. The processor chips are very small, and adaptability occurs, and their higher integration, cost and size of the system is reduced.

Step Down transformer:

Step down transformer could moreover be a fundamental a neighborhood of coordinated force supply. To wander down the mains 230V AC we will in general endeavor down transformer.

Following are the first quality of electronic transformer.

1. Power transformer are regularly proposed to figure at one recurrence from wellspring of impedance.

2. It's expected to work with adequate protection having important dielectric strength. Transformer rating is communicated in volt-amp. The volt-amp of each to the individual are added the heap misfortunes.

3. Temperature ascent of a transformer is about on the two notable elements i.e., misfortunes done by transformer and warmth disseminating and cooling office gave unit.

Flow Chart:

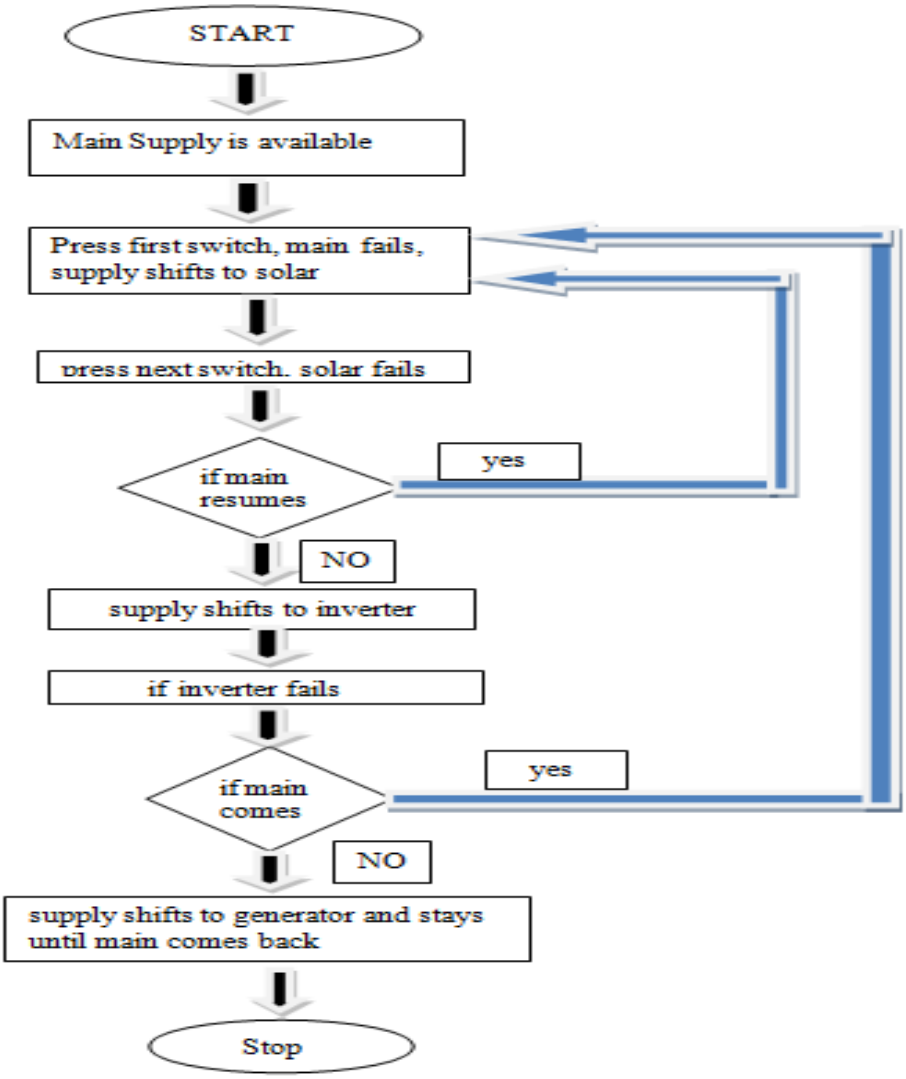

Fig. 4.2 Flowchart

RESULT:

Observation:

The project works successfully and helps to supply continuous source to the load. During this process we observed that AC mains is employed continuously as supply to the load. Due to some causes AC mains power supply fails then load gets supply from Solar. We are using generator as third option of power supply to take care of continuous power supply when solar power unable to supply energy i.e., in rainy season and in the cloudy days and dark. When Solar fails the load gets supply from Inverter then on. When AC mains supply is out there during any of another source in use then it switches to mains supply i.e., the load gets supply from mains.

FUTURESCOPE:

India is 7th largest country within the world. There are numerous industries in India which require greater power supply. These industries would not afford any power shortage during process. So here we are introducing a system which provides continuous power supply.

By reducing delay, the switching of sources is going to be wiped out few seconds and load get supply from another source immediately on failure of current available source.

If sensors are used for sensing of obtainable source, then fast switching will happen. This may end in providing immediate power supply on failure of obtainable power supply. In future we will implement this project with renewable sources.

CONCLUSION:

The demand of energy worldwide grows rapidly because energy generation is low, but energy consumption is on a high rate. Prioritizing the varied available sources makes the choice and utilization economic. The priorities could also be decided consistent with the supply of source, usage cost, its effects on the operation of other equipment. the choice algorithm is often coded into a microcontroller which can automatically shift between different sources using relays through the relay driver. The project involves three different sources with different parameters to permit microcontroller to guage the choice of best available source to use.

REFERENCES:

1.Robert Dowuona-Owoo (2008), "Design and construction of three phase automatic transfer switch." A thesis presented at regent university college of science and technology Ghana.

2.Shanmukha Nagaraj and Ramesh S (2013), "Programmable Logic Controlled Circuits." International Journal of Research in Engineering and Technology Vol. 1, issue 2, July 2013.

3.Charlie Hume, (effective march 2015), "Transfer switch 101: an introductory guide to picking the right transfer switch for your environment, White paper WP140001EN." Retrieved from: www.eaton.com/ecm/group/public/@pub/@electrical/documents/.../wp140001en.pdf.

4.Ryan ishino, PE, RCDD, LEED, AP, JBA Consulting Engineers, Irvine, calif. (12/03/2015), "Understanding transfer switch operations." Retrieved from: electrical engineering.

5. Awais, A., Zahid, A., & Rafique, A. (2013). Auto Power Supply Control by Different Sources (Doctoral dissertation, University of Management and Technology).