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"Multi-Power Supply Control By Usins Four Different Sources To Avoid Supply Interruption"

[1]Ashish Shastrakar, [2]Abhishek Bhoyte,[3]Sandhya Dhone,[4]Jaya Masram,
[5] Prof. P.P. Titarmare

[1]*Students, Suryodaya College of Engineering And Technology, Nagpur*
[2]*Students, Suryodaya College of Engineering And Technology, Nagpur*
[3]*Students, Suryodaya Collegeoof Engineering And Technology, Nagpur*
[4]*Students, Suryodaya College of Engineering And Technology, Nagpur*
[5]*Assistant Prof, Suryodaya College of Engineering And Technology, Nagpur*

Abstract: *The demand of electricity is increasingday by day India being the populated country, the most common problem faced and frequent power cuts of electricity. The main objective of this project is to solve both these problem is to provide continuous power supply to a load, by selecting the supply from any of the four sources that are solar, wind, mains and generator. Automatically in the absence of any source.This system uses for four different source to provide uninterrupted power supply and any of the source is renewable source i.e. solar energy and wind energy. This arrangement can be designed by using microcontroller and relays. When a source, solar fail the supply power automatically shifts to next priority source wind, main and generator. An LCD is used to show that which source is used to provide the supply.*

Keywords: *Microcontroller, Relay, LCD, Power supply and wind.*

I. Introduction

For very long time, power outages, power interrupts and also unexpected routine power line maintenance is one of the major problems faced in industries, commercial and domestic whole over the world. For that case, this project provides an automatic operation of electrical power distribution systems, the rapid and reliable transfer of the system from one power source to another during specific events such as power outages, power interrupts, routine power line maintenance. This project provides a practical solution to provide an alternative power supply or uninterrupted power supply in automated mode to the load during frequent powercuts or in cases where power cuts or power outages cannot be avoided.

II. Methodology

The main reason behind to selects this work is there are lot of industries and domestic appliances which work on high voltage supply and are high costly. And some electrical devices need regular or uninterrupted or continuous power supply to work well for longer life span.

Many electrical system are highly sensitive which can be affected by a minute interruption in the power supply system there are many chance of interruption to take place at any times like power fail/cut off, faults etc. To avoid such types of problems these project system are best which take power supply via four different sources and alternate between them using microcontroller. The merit of this work is that they are reliable and economical.

Block Diagram

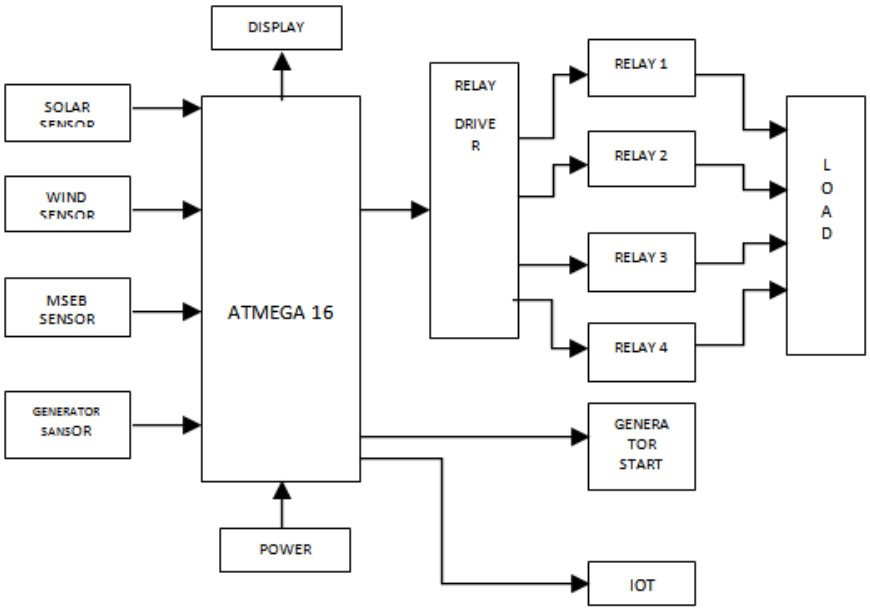

Fig.1 Block Diagram of Multi Power Supply Control by using Four Different Source.

III. Components

Transformer: The transformer is used for connecting this system directly to 220V AC. It steps down 220V into 12V.

Rectifier: In this work bridge rectifier is used due to its merits like full wave rectification and high stability. For a single half of the cycle only two diodes will be in forward bias connection.

Filters: Capacitive filters are used in this work. It removes the ripples from output of the rectifier. The DC output received from this filter is constant until the mains voltage and load is maintained constant.

Voltage Regulator: The voltage regulator is used for regulating 12V DC into 5V DC voltages for supplying the power to the LED, microcontroller and other components. IC LM 7805 voltage regulator is used for regulating voltages.

Microcontroller: In this auto power supply control system. Microcontroller is used for the auto selection of the available source. It shifted the load to the other power supply source automatically without any interruption.
It is programmed in C language with help of micro C software and is powered up with 5V DC voltages. It is interfaced with LCD display and relay driver IC.

Relay driver: In this auto power supply control system, the relay driver is used for driving the load relay. This relay receives the signal from microcontroller for shifting the load on another supply source. It is powered up with 5V DC and interfaced with microcontroller.

Relay: It is an electromagnetic switch. load relays used in this work are connected in parallel with load and four sources of supplies are also connected in parallel with these load relay. These load relays consist of normally open and closed contacts and are operated through the relay driver IC.

LCD Display: LCD display is used for displaying the source of supply on which the whole system is working.

Working: This system uses 4 different sources of supply which drive the load and provide uninterrupted power supply. All the four source are connected parallel to each other as shown in the block diagram. The sequence of power source is mains, solar, inverter and generator respectively i.e. highest priority is given to mains and least priority to generator.

At normal condition i.e. when mains supply is present, relay connected to mains sense the output from the mains and load is driven by mains supply. All other source which connected in parallel is open at this time. In case mains supply is cut off, power is automatically drawn from second source i.e. solar. If solar supply is absent the microcontroller will switched to inverter supply will automatically shift to generator.
Load relay used in this work are connected in parallel with load and four sources of supplies are also connected in parallel with these load relay. These load relay consist of normally open and close contacts and are operated through the relay drive IC.

IV. Assets & Appliences

This project includes zero manual interaction.
This project effectively uses natural resources which lower the cost.

The system does not contain any rotating or moving part.
The application of this project lies in the various and wide places of applications such as, hospitals and most especially manufacturing industries and mining industries where a continuous supply of power is vital.

V. Conclusion

This project is use to provide a continuous power to the loads through any of the sources from which we are operating the device i.e. main line, generator, inverter and solar automatically in the absence of any of the source. The complete operation is based on the microcontroller. This work is a low cost, reliable, efficient system.

This system can be further enhanced by using other sources like wind then taking into consideration for using the best possible power source whose tariff remains lowest at that moment.

Acknowledgement

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