Automatic Control Power Sources

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1. ABSTRACT

The power conversion system is used to effectively transfer power to a given load in building an automated application. the integration of the most important power supply with the solar power supply and the diesel generator power supply is a key element in the design of the power supply control gadget. This purpose introduces a real-time model design and the use of a deceptive automated gadget for the distribution of bulk power to the load applied by Programmable Logic Control (percent), Coal Crisis is one of India's largest power generation companies with the lowest level of coal production as the economy grows and fuels the electricity demand. Frequent exhaustion does not work well and the MSEB electricity bill also operates on an economical budget. Environment The impact of the sun is not working in winter and the rainy season due to lack of solar radiation and wind turbine not working in summer due to low winds.

Keywords: Automatic control, Solar Power, Diesel Generator, Power Supply, Programmable Logic Controller, Grid Supply, Solar Plates, Wind turbine, Battery.

2. INTRODUCTION

Failure of power or end of a major problem regarding the continuity of supply industries, factories with strong failures is not green. Power failure is the main issue regarding continuity of supply in industries, and factories. With constant power failure, there are a lot of disturbances in industry supply. The introduction of automatic switching of power sources is

mainly done to reduce the problems in manual switching along with smooth switching. The project represents the design and construction of automatic switching of power sources using PLC, as the switching operation is done by PLC automatically restores the power supply by using generator backup when there is no availability of mains supply. This helps in reducing the time consumption required for switching operations. In this world of increasing automation PLC struck our mind. For controlling, monitoring, and integrating system with newer technology PLC is a very efficient tool to automate. As PLC has ridged type construction hence it can withstand any situation like Dust, vibrations, temperature, humidity, and noise. In industry, the most important and sensible loads are controlled through the PLC. The PLC automation has one of the advantages that it is a very easy programming language and It can be easily understood by workers. For handling and controlling PLC there is no need for experts as it can be operated by an ordinary worker. In this project controlling all 4 sources is done under the programming of PLC. As we have 4 different sources Solar, Wind, Mains, and Diesel generators to properly operate these sources PLC is the best programming tool. Switching off all these 4 sources is done through 4 different Contactors. If any of the sources are turned off then PLC switches the load to another supply source by providing a signal to the contactor driver and then the relay driver.
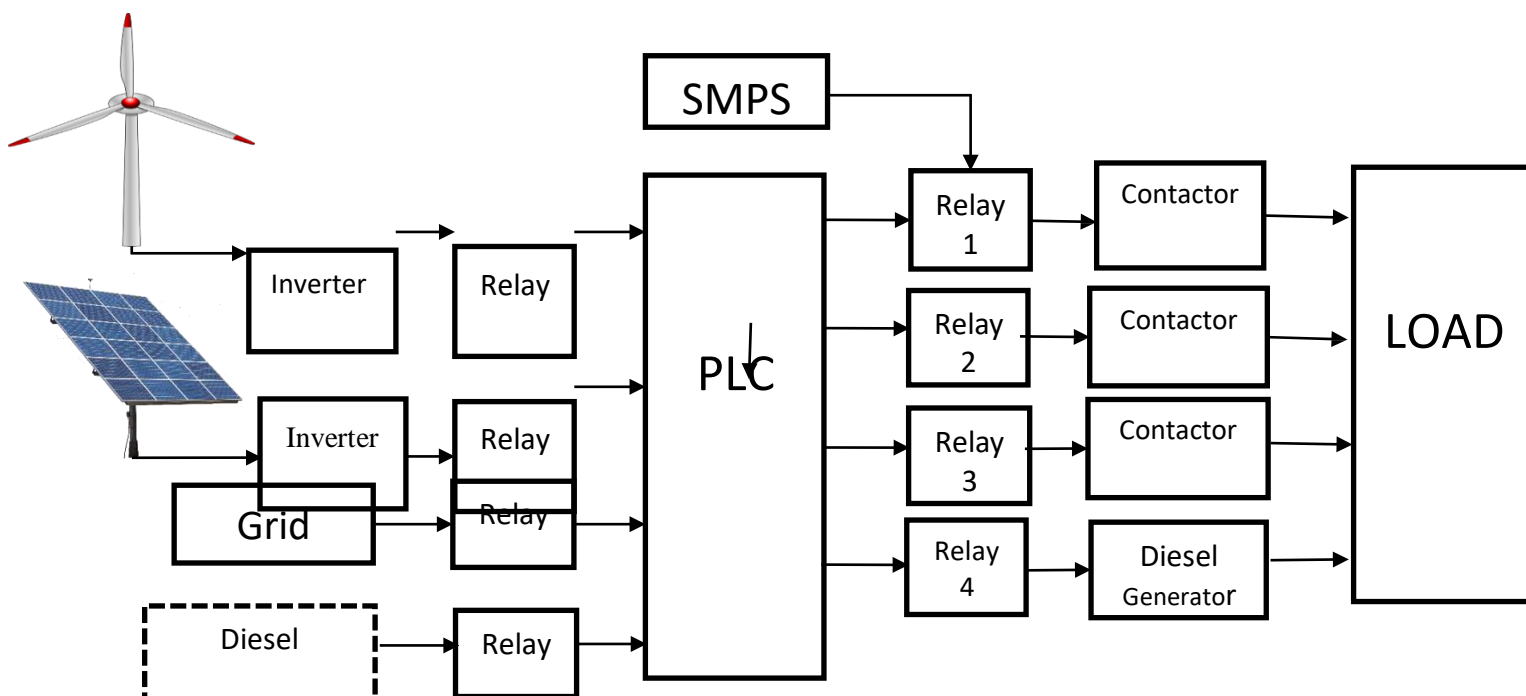
BLOCK DIAGRAM

**Fig 3.1 Block Diagram of Automatic Control of Power Sources.**

SYSTEM DESIGN

This automated power supply control system works on the automatic operation of switching load on load another source available without wasting time or extinguishing the load. Here's a demonstration aims to use the keys of choice to turn off any source of supply. In this program, PLC microcontroller which is the most important part of this system always, keep hearing the whole available resources. If any source is turned off with select keys then PLC switches load on another supply source by providing a signal to the transmission driver and then the relay driver switching in the appropriate upload. All work is done by PLC in a few seconds and this has changed the time can be changed during the configuration of the PLC microcontroller. Here 3 loads are used connected in line with the load and 3 sources of goods are also connected in line these loading cables. These upload slides include generally open and close and active contacts by relay driver. We tested this program by connecting the Led light to the exit side as load if any disturbance occurs during the turn on the light flashes but here no blinking occurs during the conversion means no disturbance to provide power to the exit side.

WORKING

As shown in this circuit diagram all incoming power sources are connected with a 230v relay. From the above circuit diagram, we come to know that we have 4 input sources Solar Energy, Wind Energy, Grid Supply, and Diesel Generator. From all these sources our priority will be Renewable energy sources which are Solar and Wind. Our second priority is Grid supply, and at last, we have a backup source that is Diesel Generator. The incoming supply from these sources will be given to 230v Relay where the relay will act as a switching component. The Supply from this relay is passed to PLC where PLC acts as a programming device. All over switching is done through PLC programming where contactors act as switching devices in this circuit. If there is any interruption in supply PLC will change the supply from one source to another source this process will be done instantly and we cannot see it with our naked eyes. We have a back source Diesel Generator which will get operated automatically after 10 sec when there is no availability of any supply. If we have 4 sources at the start the PLC will first go for solar or wind in case if we don't have both sources the PLC will switch to Mains supply and in the last case if we don't have any sources we will get supply from Diesel Generator but for that, we have 10 sec of timers if in that timer we get any of the supply it will switch to that source. So this working of our Automatic control of Power sources.

SIMULATION RESULT:
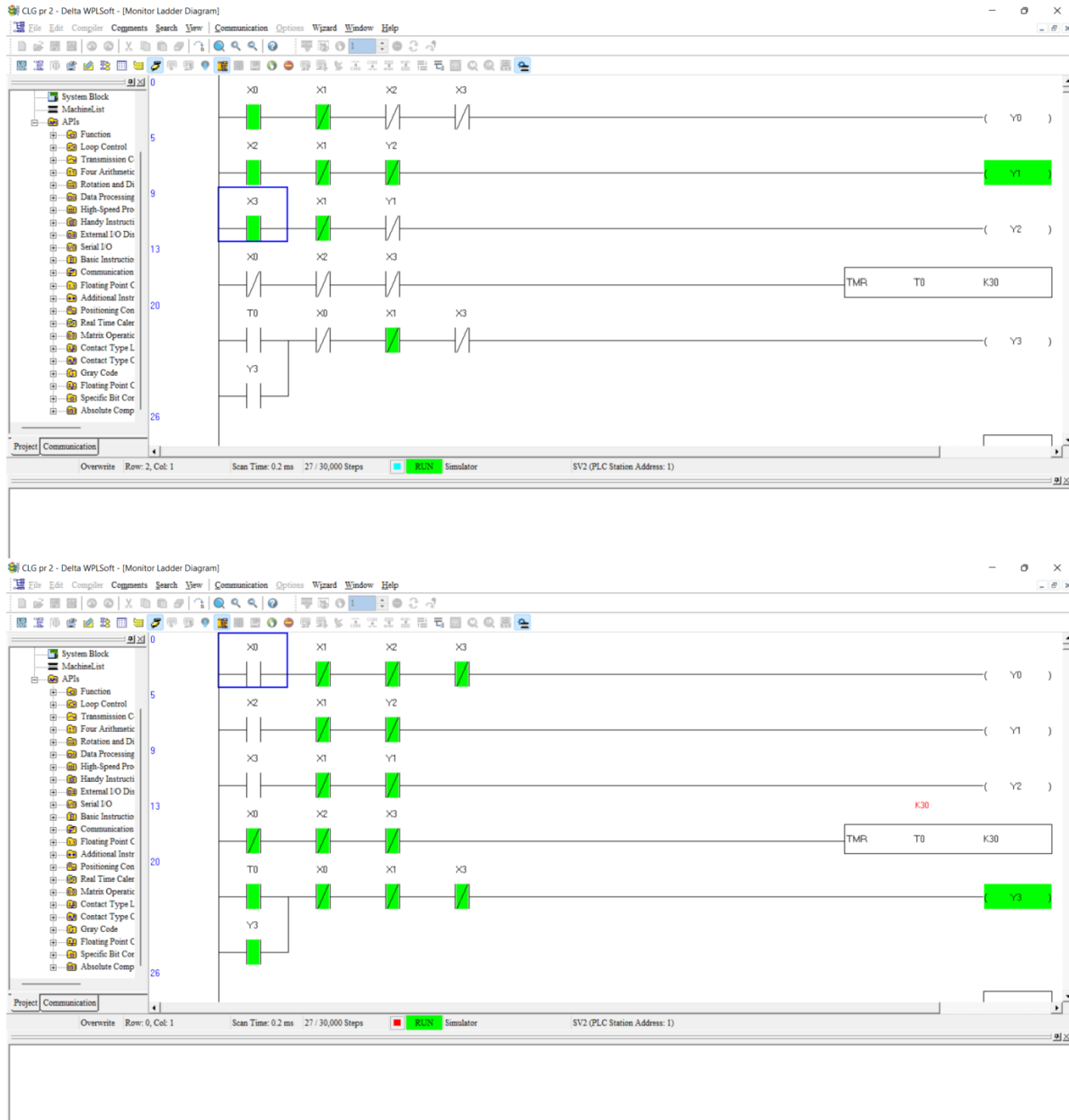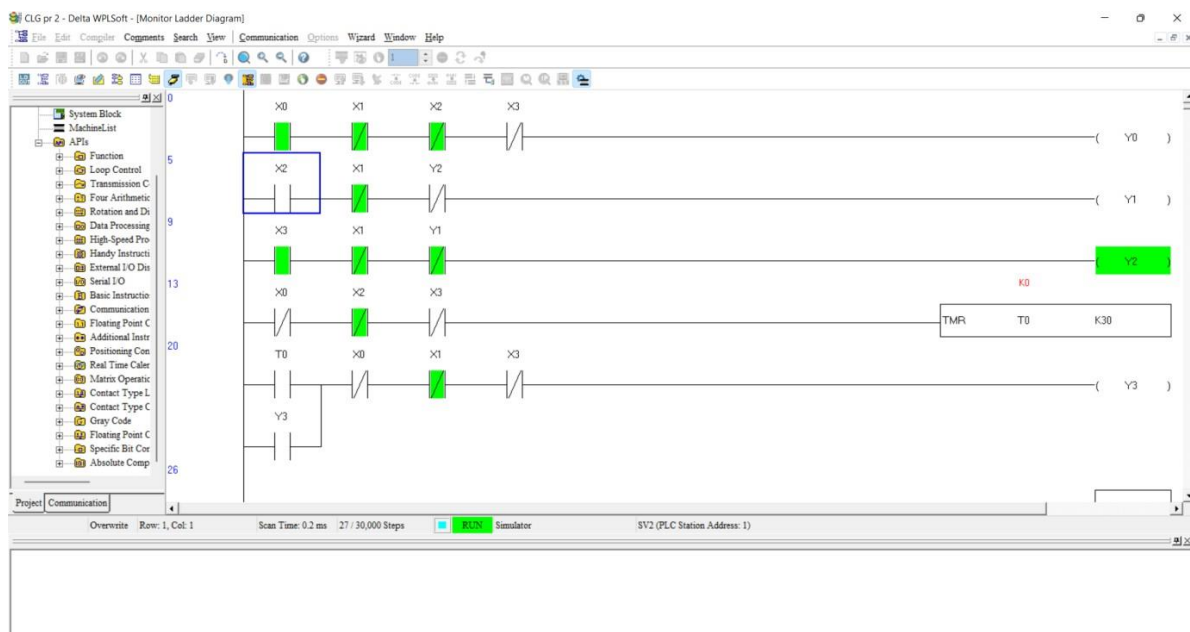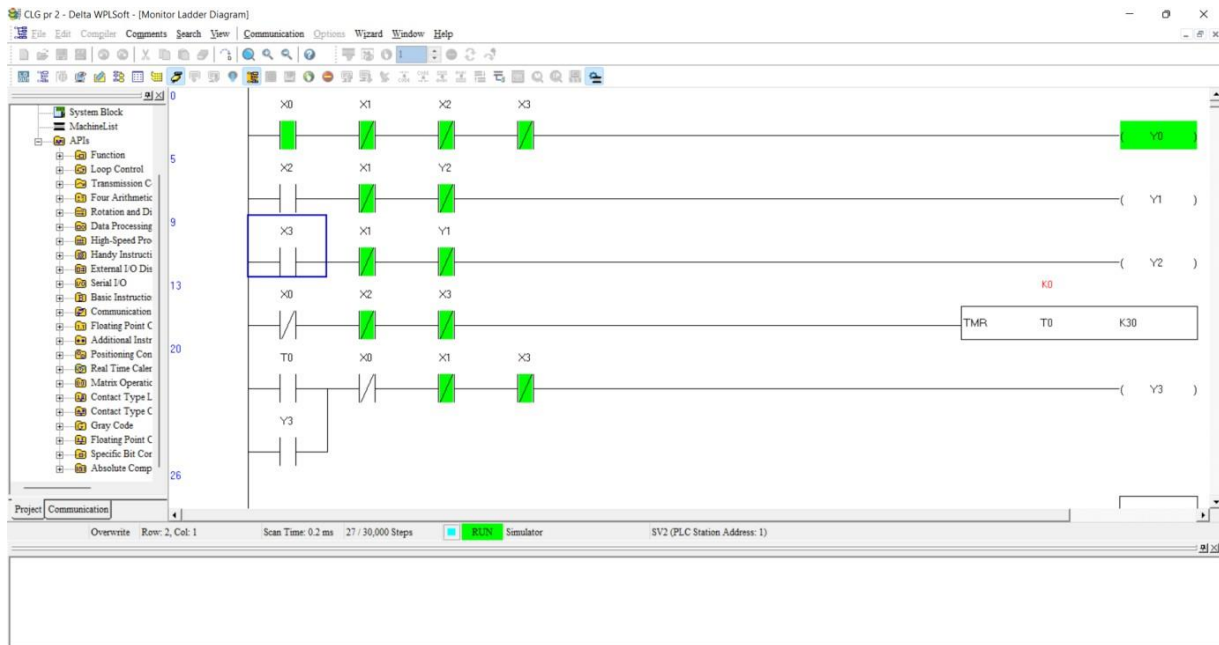
RESULT TABLE

SR. No	Conditions	Result
1	When renewable sources are not available	Automatic switching is done in Grid mode.
2	When we have Solar energy	Automatic switching is done on Solar energy
3	When we have Wind energy	Automatic Switching is done on Wind energy.
4	In case if we have both solar and wind energy .	Automatic Switching is done on availability of first source.
5	In case if we don't have any renewable energy or grid supply.	Automatic Switching is done on Diesel Generator.

Conclusion

From the above project, we hereby come to know that all sources work according to their specific Programming. As our priority is renewable energy sources wind and solar. Then our second priority is mains supply and at last, we have a backup source which is Diesel generator. the working of this project is done inaccurate manner that it will come to know that all supply works on their necessity for the project. The switching of sources is done in a well proper manner. The Switching of sources is done through contactors where these contactors get accurate information through the plc program.SMPS is used as a supply source for PLC. A 10-sec timer is provided for switching between all sources to Diesel Generator. When there is not a single supply available diesel generator gets started after 10 sec. The intention for making this project is to give an uninterrupted power supply to a customer or factory.

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