“UNINTERRUPTED POWER SUPPLY CONTROL BY USING FOUR DIFFERENT SOURCE WITH IOT”

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ABSTRACT: - The main purpose of this system is to consume the power supply from four different sources such as; solar, wind, mains and generator and provide the uninterrupted power supply as the need of electricity is increasing day by day at a tremendously rate. System arrangement is designed by using (ATMEGA16) microcontroller and relays along with IoT. Amongst these sources of any of the sources fails to supply, the supply power is automatically shifted to the next priority which is wind, mains and then generator.

Keywords: Microcontroller, Relay, IoT, LCD, supply sources.

I. INTRODUCTION

The problems like power outages, unexpected routine line maintenance and power interrupts are increasing day by day. So, to overcome from these problems, this system provides an continuous power supply. In this system renewable energy sources are used along with system microcontroller ATMEGA16, which is advanced in many ways then the 8051 microcontroller.

System also consist of IOT i.e. internet of things is used which gives updated status regarding the working of the system. Overall working of the system is totally automated. System aims at to avoid manual interaction.

II. METHODOLOGY

In the power supply there are chances of interruption occurring at any instant like power failure, faults etc. so as to avoid this types of problems this system are best by using four different sources. Because, many electrical system are highly sensitive. Which can be affected by a minute interruption in the line. This system has merits of reliable and economical.

The reason behind to select this system is there are lot of uses in manufacturing industries and domestic appliances where, huge amount of power is required. And some electrical devices
need continuous power supply to work well and for better life.

### BLOCK DIAGRAM

![Block Diagram of Multi Power Supply Control by using Four Different Sources](image1)

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

As shown in above fig.1 The block diagram of MULTIPOWER SUPPLY CONTROL BY USING FOUR DIFFERENT SOURCES. The power supply (5V) DC are apply to the ATMEGA16 microcontroller and LCD display. The system is used for four sensor i.e. Solar sensor, wind sensor, mains and generator are connected in ATMEGA16 microcontroller. The first priority are given to the natural sources and least priority to the mains and generator.

The first priority are set to the solar or wind and sensor to sense the maximum voltage. This signal apply to the ATMEGA16 microcontroller. The relay driver receive the signal from atmega16 microcontroller and shifted to the relay. These are the used four relay are used in the switching operation for different sources.

The relay are connected to the load. The ATMEGA16 microcontroller provide the signal from IOT (internet of thing).

### SCHEMATIC CIRCUIT DIAGRAM

![Schematic Circuit Diagram](image2)

**III. WORKING**

The system having an arrangement of four different sources of supply which are channelized to a load. So, as to give an continuous power supply it is not practicable to get four sources of supply such as solar supply, wind supply, mains and generator supply. We used one source and a set of relays. First source given here is the solar supply and assumed as if being fed from four different sources by connecting all the incoming sources in parallel as shown in block diagram.

The sequence of power sources is solar, wind, mains and generator respectively i.e. highest priority is given to the renewable energy sources and least priority is given to the mains and generator.

Gradually, we have given the high input signal to the Atmega16 microcontroller. So, as a result
microcontroller feed a low output to active first relay driver. Which will give result of that relay is being energized and the lamp glows. In case if supply is cut off, power is automatically dragged from second sources i.e. wind source. If there is absence of wind supply then the microcontroller will automatically switched to mains supply. If mains supply is also absence then supply will automatically shifted to generator.

Here, Microcontroller is an very essential component which always keeps sensing the available sources. If any of the source is switched off through the selection keys then microcontroller shift the load to the other supply sources. By giving the signal to the relay driver which re connected in parallel with the load relays and four different sources. Load relays has open and closed contacts which are operated through the relay driver IC. Here, we used 16×2 LCD display which display the condition of supply sources and the load on real time basis.

The relay driver IC collects outputs of microcontroller which adjust to relay in such a way that it supply continuous power to the load.

**IV. LIST OF COMPONENTS**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>List of Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Resistor</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Capacitor</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Atmega16</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Crystal Oscillator</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Voltage Regulator</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Relay</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Transformer</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>16×2 LCD</td>
<td>1</td>
</tr>
</tbody>
</table>

The steps involves in designing this system includes:

**ASSETS & APPLIANCES**

It does not have any rotating or moving part. It includes zero manual interaction. This system effectively uses renewable sources which have lower cost. It's applications lies in the wide places such as especially mining industries, manufacturing industries where, role of power is vital.

### FLOW CHART

1. **START**
   - **SOLAR SUPPLY IS AVAILABLE**
     - **YES**
     - **LOAD**
     - **SOLAR RESUMER**
   - **NO**
   - **WIND SUPPLY IS AVAILABLE**
     - **YES**
     - **LOAD**
     - **SOLAR RESUMER**
   - **NO**
   - **MAIN SUPPLY IS AVAILABLE**
     - **YES**
     - **LOAD**
     - **SOLAR RESUMER**
   - **NO**
   - **GENERATOR SUPPLY IS AVAILABLE**
     - **YES**
     - **LOAD**
     - **SOLAR RESUMER**
   - **NO**
RESULT AND DISCUSSION

Table showing results of power supply circuit of the microcontroller.

<table>
<thead>
<tr>
<th>Power Source</th>
<th>Input of the power source</th>
<th>Switch Status</th>
<th>LCD Display</th>
<th>Load Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar</td>
<td>230V</td>
<td>OFF</td>
<td>No power</td>
<td>No Light</td>
</tr>
<tr>
<td>Solar</td>
<td>230V</td>
<td>ON</td>
<td>Solar</td>
<td>Bulb Lights</td>
</tr>
<tr>
<td>Wind</td>
<td>230V</td>
<td>OFF</td>
<td>No power</td>
<td>No Light</td>
</tr>
<tr>
<td>Wind</td>
<td>230V</td>
<td>ON</td>
<td>Wind</td>
<td>Bulb Lights</td>
</tr>
<tr>
<td>Mains supply</td>
<td>230V</td>
<td>OFF</td>
<td>No power</td>
<td>No Light</td>
</tr>
<tr>
<td>Mains supply</td>
<td>230V</td>
<td>ON</td>
<td>Mains</td>
<td>Bulb Lights</td>
</tr>
<tr>
<td>Generator</td>
<td>230V</td>
<td>OFF</td>
<td>No power</td>
<td>No Light</td>
</tr>
<tr>
<td>Generator</td>
<td>230V</td>
<td>ON</td>
<td>Generator</td>
<td>Bulb Lights</td>
</tr>
</tbody>
</table>

VI. CONCLUSION

This system is used to provide a continuous power supply connected to the load from any of the four different sources i.e. solar, wind, mains and generator in automated mode in the absence of any source. The whole system is based on microcontroller Atmega16 which has low cost and efficient system. The particular components which has used give better maintenance and long period to the system.

VII. ACKNOWLEDGEMENT

We express our sincere gratitude to our guide Prof. Ashish Polke, for his, simulating guidance, continuous encouragement and supervision throughout the course of paper work.

VIII. REFERENCES


