

Wireless power transmission by using Solar Energy

Automation has created a bigger hype in the electronics. The major reason for this type is automation provides greater advantages like accuracy, energy conservation, reliability and more over the automated systems do not require any human attention. Any one of the requirements stated above demands for the design of an automated device.

Wireless energy transfer or wireless power is the transmission of electrical energy from a power source to an electrical load without a conductive physical connection. Wireless transmission is useful in cases where interconnecting wires are inconvenient, hazardous, or impossible. The problem of wireless power transmission differs from that of wireless telecommunications, such as radio. In the latter, the proportion of energy received becomes critical only if it is too low for the signal to be distinguished from the background noise. With wireless power, efficiency is the more significant parameter. A large part of the energy sent out by the generating plant must arrive at the receiver or receivers to make the system economical. The most common form of wireless power transmission is carried out using direct induction followed by resonant magnetic induction.

The project consists of two self resonating copper coils of same resonating frequency of about 100KHZ. One copper wire is connected to the power source (transmitter), while the other copper wire is connected to the device (Receiver).The electric power from the power source causes the copper coil connected to it to start oscillating at a particular (KHz) frequency. Subsequently, the space around the copper coil gets filled with nonmagnetic radiations. This generated magnetic field further transfers the power to the other copper coil connected to the receiver. Since this coil is also of the same frequency, it starts oscillating at the same frequency as the first coil. This is known as 'coupled resonance' and is the principle of Tesla.

This project results in a device where the electricity is transmitted wirelessly through copper coils for a distance range of about 10 cm. The system uses solar energy and pulse generator of 100 KHZ at the transmitter circuit. Therefore, the current flows from the coil on the transmitter side to the receiver side coil wirelessly connected with rectifier and regulator.

In this project we are using solar panel, Mosfet driver circuit, a pair of copper coils, rectifier, filter and a load.

Features:

1. Copper Coil System
2. Usage of pulse generator
3. Highly Sensitive.
4. Using solar energy.

The main blocks of this project are:

1. Regulated power supply (RPS)
2. Solar panel
3. LED Indicator
4. Pulse generator
5. Copper coils

Block diagram of the project:

