

Green Wind Energy for rural electrification

The project aims at developing a system which makes use of wind energy for rural electrification. Wind energy is treated as non renewable source of energy.

Wind energy has been used since the earliest civilization to grind grain, pump water from deep wells, and power sailboats. Wind-mills in pre-industrial Europe were used for many things, including irrigation or drainage pumping, grain-grinding, saw-milling of timber, and the processing of other commodities such as spices, cocoa, paints and dyes, and tobacco. Before the U.S. installed an infrastructure of electricity wires, both water-pumping windmills and small wind electric turbines (“wind chargers”) were vital to farming and developing the American Great Plains and west. In recent decades, the industry has been perfecting the wind turbine to convert the power of the wind into electricity. The wind turbine has many advantages that make it an attractive energy source, especially in parts of the world where the transmission infrastructure is not fully developed. It is modular and can be installed relatively quickly, so it is easy to match electricity supply and demand. The fuel – the wind – is free and plentiful, which eliminates or reduces the need to purchase, ship, and store expensive fuels. It is flexible – with the power generated, households use can use appliances, such as lighting and refrigeration, schools can use computers and televisions, and industries can access a reliable power source. Perhaps most importantly, the generator does not produce any harmful emissions in the process of generating the electricity, unlike many other generation sources.

The project makes use of a wind turbine. The wind energy obtained is stored to a battery. The battery supply is fed to pulse generator and in turn to a MOSFET which is capable of generating ON/OFF pulses of different frequencies. This is fed to a step up transformer to generate a low voltage AC. This AC is fed to electrical appliance.

Features of this project:

1. Storing wind energy.
2. Usage of wind energy for switching electrical appliance.
3. ON/ OFF control.

The project focuses on the following areas:

1. Pulse generation techniques.
2. Wind turbine working principle.
3. MOSFET working principle.

The major building blocks of this project are:

1. Wind turbine.
2. Pulse generator.
3. MOSFET.
4. Step up transformer.
5. ON/ OFF switch.
6. Bulb.

Block Diagram:

Green Wind Energy for rural electrification

