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ENERGY EFFICIENT STREET LIGHTING USING WIND

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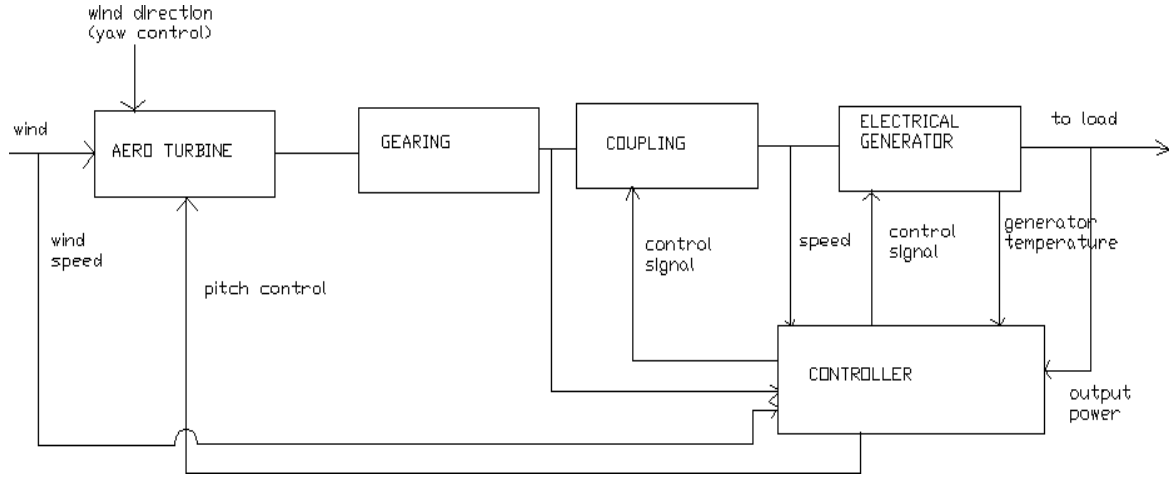
Abstract

This paper represent the street lighting using wind. In the past few years there is a global transformation on technology and researches which aims to energy savings through the usage of renewable sources in many applications. wind energy can be used for street lighting usually in cases of low consumption applications. . The objective is to operate the lighting system with renewable energy and also to use the appropriate lamp for the lighting of low traffic roads. Recent researches show that street lighting at night can be a costly and complicated matter. The proposed lighting system is an integrated unit with a wind generator, lamp, battery, inverter, charger etc.

Introduction

Wind turbines produce rotational motion; wind energy is readily converted into electrical energy by connecting the turbine to an electric generator. The combination of wind turbine and generator is some times referred as an aero generator. A step-up transmission is usually required to match the relatively slow speed of the wind rotor to the higher speed of an electric generator. Data quoted by some scientists that for India wind speed value lies between 5 km/hr to 15-20 km/hr. These low and seasonal winds imply a high cost of exploitation of wind energy. Calculations based on the performance of a typical windmill have indicated that a unit of energy derived from a windmill will be at least several times more expensive than energy derivable from electric distribution lines at the standard rates, provided such electrical energy is at all available at the windmill site.

Block diagram



Need for non conventional energy

Fuel deposit in the world will soon deplete by the end of 2020. Fuel security will be maximum. Country using petroleum will not have the chance to use petroleum products. Keeping this dangerous situation in mind, we tried to make use of non-pollutant natural resource of solar energy. The creation of new source of perennial is environmental acceptable. Low cost electrical energy as replacement for energy from rapidly depleting resources of fossil fuels is the fundamental need for the survival of mankind. We have oil resources for about 25 Yr. And coal reserves for about 75-100 Yr. Resort to measure the beginning of coal in thermal electric. Power station to service the population would result in global elementary change in leading to world wide draught and desertification. Wind source is used as a non-conventional energy for the above alternatives.

Basic components of wind

1. Aero turbine
2. Gearing
3. coupling
4. Electrical generator
5. Controller

Sub components windmill are,

- Wind turbine or rotor
- Wind mill head
- Transmission and control, and
- Supporting structure

Working principle

Wind turbines operate on a simple principle. The energy in the wind turns two or three propeller-like blades around a rotor. The rotor is connected to the main shaft, which spins a generator to create electricity. Wind turbines convert the kinetic energy in the wind into mechanical power. The generator convert the mechanical power to electrical power.

Advantages

i. Simplicity in construction.

ii. Initial cost is lower than other sources of energy.

iii. Less running cost.
iv. Pollution free operation.
v. Less maintenance.
vi. Power less is low.
vii. Extension is possible.

Application

i. It can be used in Supply cut off time.
ii. It can be used in thick population area.
iii. Used in schools.
iv. Used in traffic area.
v. Used in theatre.
vi. Used in power plant.

Future scope

Even though there is a rapid growth in the field of electronics gadgets one has to feed them properly to ensure 100% utilization. However, it is practical for a common man. The only source that remains unneeded until the end of human survival is manpower and with the help of this supreme power we over come the draw back of a common man too.

Conclusion

First of all I thank every one who contributed for the grand success of our project. By doing our project we have gained at most knowledge. In addition, we are glad about our optimistic and creative thinking. The project developed for the welfare of human lives has been dedicated to themselves as a tribute.

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