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HORIZONTAL AXIS WIND TURBINE

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Abstract
This paper describes a systematic approach to building an intelligent solar Tracking system (ISTS), for improving the performance of solar panels. The ISTS is a hybrid hardware / software prototype, which automatically provides best alignment of solar panel with the sun, to get maximum output (electricity). This method is increasing power collection efficiency by developing a device that tracts the sun to keep the panel at a right angle to its rays.The Embedded solar tracking instrumentation system by using microcontroller. The system consists of Light Dependent Resistor (LDR) sensor, DC motor .Arduino UNO microcontroller is the main component for controlling the system. The solar system will track the location of the sun to ensure the solar panel is always perpendicular with the sun therefore optimizing power output. The operation of the system on sunny and bad weather condition has been presented in this paper. The solar tracking prototype has been stated for future works.

1. INTRODUCTION

Renewable energy is generally defined as energy that comes from resources which are naturally replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat. In national wide the markets are investing in the renewable energy in the coming decade and beyond. Renewable energy projects are large-scale, renewable energy sources are suitable for the rural and remote areas and developing countries, three main concepts that are involved in this project is wind, turbine concept, gear bearing concept and flux cutting concept in harvesting wind energy.

2. LITERATURE REVIEW

Kunduru Akhil Reddy et al. investigated a brief research, study, design and analysis on wind turbine. Evaluates the aerodynamic performance of variable speed fixed pitch horizontal axis wind turbine blade using two- and three-dimensional computational fluid dynamics. The primary objective of the paper is to increase the aerodynamic efficiency of a wind turbine. The blades are designed using different type of airfoils which are associated with angle of attack. The blade design is responsible for the efficiency of the wind turbine. The design of the blade is done using Q-blade software. The result indicates that the power output is determined using blade elemental theory. The power output of designed blade design is higher when compare to existing design of the blade.

Parth Rathode et al. analyzed a review on combined vertical axis wind turbine. The increased efficiency is achieved based on the characteristics such as aspect ratio, tip speed ratio, velocity and other geometry parameter. The experiment is conducted to increase the power production and efficiency of a wind turbine. The development of design is optimized by combining the blade structure and the flow performance. The result indicates that the efficiency of the turbine is always based on the wind speed

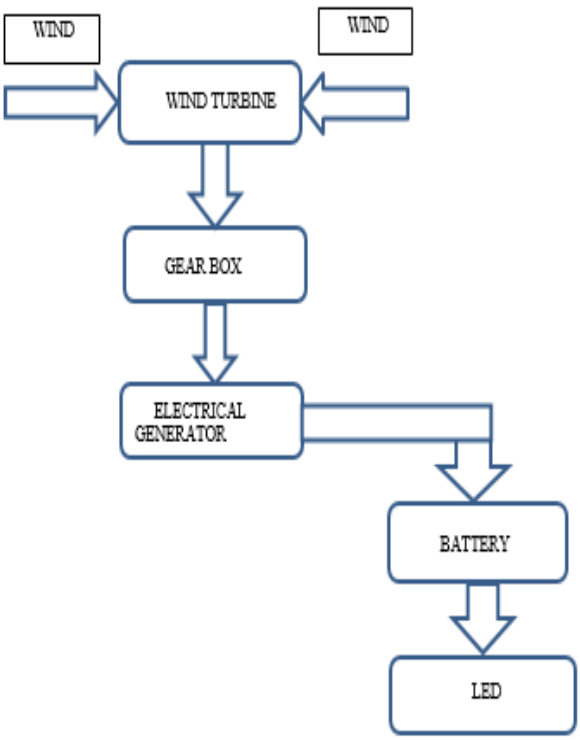
and climatic conditions. The lowest aspect ratio improves the power coefficient of the turbine. The power generation of combined rotor is high compare to the single savonius and darrieus rotor.

M. Abid et al. analyzed the design, development and testing of the savonius and durries vertical axis wind turbine. This paper shows that vertical axis wind mill is more efficient when compare to horizontal axis wind mill. The darrieus turbine consists of three blades which can start alone at low wind speed. When savories turbine is attached on the top of existing windmill which provide the self-start at low wind speed. The result indicates that the darrieus vertical axis wind turbine acts as a self-starter during the testing. The function required the starting mechanism which can be provided by the combination of the NACA 0030 aero foil will improves the self-starting capability of the turbine

3. RESEARCH METHODOLOGY

The process of designing a wind turbine involves the conceptual implementation of electrical and mechanical components to create a machine capable of converting the wind's kinetic energy into electrical or mechanical energy. If the machine can be designed and is capable of produce the energy at a low cost than its rival like non-renewable energy resources like fossil fuels and nuclear energy, then the project is deemed to be economically viable. Renewable energy projects are prioritized by the government for the future generations to use the natural resources without any scarcity problems. However, along with the majority of design projects, it is a fundamental design to maintain the energy cost at a lower level than of existing energy

4. BLOCL DIAGRAM



5. FINDING AND DISCUSSION

Renewable energy sources more sustainable and easily available from the surroundings. The usage of the natural resources is easy because they do not deplete when compared to the non-renewable energy sources. The usage of renewable energy resources is less cost compared to non-renewable energy resources. The mini windmill are easily employed for the houses and domestic uses.

6. CONCLUSION AND FURTHER RESEARCH

Small scale wind energy conversion systems are an effective, environmentally friendly power source for household and other applications. Although they are subjected to climatic behavior and do not always deliver a constant supply of energy, they can be adapted to energy storage tanks that allow the selective distribution of the energy once it has been converted. Unlike coal, wind turbines don't create greenhouse gases and are completely renewable sources.

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