Imperial Journal of Interdisciplinary Research (IJIR)
Vol-2, Issue-5, 2016
ISSN: 2454-1362, http://www.onlinejournal.in

Design & Development of Hybrid (Solar/Wind) Power Generation System

Ajay Shrinet[1] & Devesh Kumar[2]
[1]M.Tech Student, [2]Assistant Professor [1,2]Department of Mechanical Engineering
Madan Mohan Malaviya University of Technology, Gorakhpur, Uttar Pradesh, India

Abstract: *The project is a combination of mechanical & electronics engineering for the upcoming future due to declination of fossil fuels. The goal has been to construct a wind turbine driven water pumping system which lift the water from low head to high head along with the utilization of solar energy for the upcoming future. The purpose of constructing this project is to spread the idea for power generation with the help of Hybrid system.*

In 2009, two students from University of California was conducted a field study regarding lack of water i.e used for drinking & irrigation purpose and they have found that it was a serious issue. When they came back to Sweden they have constructed a model of a windmill driven water pump that employs wind energy for water pumping and other applications which are useful for farmers. The main aim of developing this type of windmill driven water pump is that farmers didn't depend upon other persons for the irrigation & other purposes.

Keywords: *Hybrid System, Solar Energy, Wind Energy, Water Pumping etc.*

1. Introduction:

As I came across so many technologies regarding irrigation purpose & water pumping. For the activities like crop growing, vegetable production farmers were spending large amount of water. For taking water they have undergone the adaptation of bore well and pumping the water through the fossil fuel pump etc for their daily life. Sometimes they have to pay amount for this therefore it becomes burden to get profit in irrigation when the expenses were deducted in large amount.

To get over this we are implementing wind turbine driven water pumping system to drag the water from bore well (i.e low head) to the irrigation field (i.e high head) along with solar panel. I am making the hybrid system (by using Solar & Wind energy), in the case of wind absence we can use the solar power for pumping the water & vice versa. The power is also generated by this system i.e very useful.

By studying over different cases the main aim of my project that came into picturize is that, the use of wind and solar energy for pumping the water from low head to high head & battery charging also by making it hybrid.

The large/extent use of non renewable fuels like coal/petroleum based products/oil etc is the main reason of negative impact on our environment. In fact the fossil fuels are important source for the power generation and take care of the whole world power generation in a proper way. Knowing the concern about global warming & our dependency on fossil fuels we are moving towards renewable sources of energy. Here I am discussing about two renewable resources of energy i.e solar energy & wind energy. Both these sources of energy are easily available in worldwide & are environmental friendly also. By all these reasons I am implementing this technology.

2. Literature Summary:

Deepak Kumar Lal in 2010 concluded that: A large proportion of the world's population lives in urban & rural areas that are geographically separated and less populated. In this paper he proposed a hybrid power generation system i.e suitable for isolated area application. The concept behind hybrid renewable energy sources is that, the base load viability is to be covered by the largest and firmly available renewable energy sources and other intermittent sources that should cover the peak load of an isolated mini grid electric system. The study is based on modeling, simulation and different methodology of renewable energy system in rural areas mainly in India. Various renewable and alternative energy resources, energy storage and their usefulness in terms of the cost and their performance we have to discuss.

GM Shafiullah in 2010 concluded that: Current power systems create many environmental impacts due to utilization of fossil fuels mainly coal which produces carbon dioxide i.e emitted into the atmosphere. In respect to fossil fuels, renewable energy sources offer another sources of energy which are in general: easily available, technically effective and environmentally friendly also. Due to all these excellent properties of renewable energy