

Department : **Mechanical**

Year : **2013-2014**

Group No: **6**

Guided By

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Project Title

DEVELOPMENT OF VERTICAL AXIS WIND TURBINE- THE WAY TOWARDS FUEL REPLACEMENT OF DIESEL PUMP

Abstract:

This project is a combination of mechanical engineering and sustainable development in developing countries. Wind as a source of energy is being used from very long time. It has gained more significance in the current age of energy crisis. Blade is the most important component of a wind turbine which controls the performance of a wind turbine and design of other components attached to it. The Wind Powered water pump using vertical axis wind turbine provides the efficient utilization of wind energy. The coupling of the wind rotor with the pump can be used to carry water from one place to another in salt pans. Calculations have been made on the energy available in the wind and then energy analysis was performed to see how much wind speed is required for the system to work. If wind speed is low, the windmill can be adjusted by placing the connecting rod closer to the rotation centre where it requires less work to function. As a result of that, the volume of water per Stroke will decrease and it will take longer time to fill the tank. Various Torque calculations are carried out here for the actual determination of the gear ratio for the gear mechanism and it seems to be utilizing the car Differential with the ratio of 1:5 for transmitting the wind power to gear shaft. Various alternatives have been chosen for the pump like centrifugal pump, Barrel Pump and Piston Pump, among them the pump is to be selected which would able to pump the water efficiently. Building the irrigation system was not part of this project. In this project diesel pump for water transmission is replaced with the newly arising technology with wind.

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