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A DESIGN OF LOW COST WORKING MODEL OF WIND TURBINE FOR BATTERY CHARGING PURPOSE

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The paper discusses that how to make a cost effective wind battery charger for rural community. Wind battery chargers are becoming popular among the rural communities as they can generate electricity capacity of which can be vary from 50 watts to 250 watts. As it is shown in the studies that power generated by the wind battery charger directly proportionate to area which is swept by the rotor blades of the wind turbine. In other words to increase the power out put, it is necessary to increase the radius of the wind blades. Subsequently increasing the overall size of the wind rotor, which is needed to be optimized with a base function of, cost analysis. Two-blade designs of wind battery chargers are the most cost-effective designs among the wind energy converters for battery charging. And also it is essential to have three-blade design to minimize the vibration to increase the overall plant efficiency relative to Blitz criteria. The faculty of engineering has designed a low cost-wind energy converter for battery charging purpose with the help of computer simulation. Airfoil of the wind blade is selected from NACA airfoil designs. Rated wind speed is taken; as 5 m/s. Furling is 18 m/s. Diameter of the wind blade is 3.2 m. Angle of attack is taken as 17 degrees. Speed ratio of multiplication is 10:1.And Hub of the wind rotor is designed in such away to hold the blades at Constant pitch. Materials for wind blades are used as treated wood planks and components such as hub, housing of multiplicator, cover & rudder of the plant are made out of waste materials of steel and other metals. Cost per 100-watt plant is approximately Rs. 48000.00. This is 1/3 rd of the cost reduction of available wind battery chargers. Assemble of wind energy converter for battery charging is fabricated in the faculty of engineering and made several trials to investigate the behavior of the plant according to different wind climates. Below: Assembling process of the wind energy converter.