BLADE DESIGN FOR STAND-ALONE ROOM LIGHTING POWERED BY WIND ENERGY

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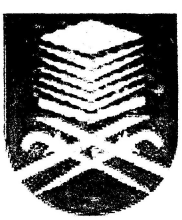

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ABSTRACT

This project presents the blade design for the stand-alone room lighting power by wind energy. The blade design is very important because to collect the wind energy as maximum as possible. The blade design in this project is drag-based vertical axis wind turbine (VAWT). The system is creating because wind energy is one of renewable energy that the wind source is free and can get everywhere compare to other renewable energy. But other system that use energy source from sun is very expensive. So hopefully the new system of wind turbine is very practically to inventing because the component of the system is cheapest. The methodology used in this project is involved of simulation and hardware design. Simulation process conducted by CATIA, STAR DESIGN and STAR CCM software is used to simulate the blade design and determine the value of drag coefficient. Hardware design is proceed by choose the blade have higher force of drag. The experiment conducted to blade is tested in room and use DC generator to generate energy. The results collected is satisfying the objectives of project where it able to charge the rechargeable battery. For the future development, the blade must be design properly such as use airfoil VAWT and used more powerful permanent magnet generator.

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