Computational Analysis Of Micro Wind Turbine With Bamboo Blades For Domestic Applications

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Abstract: A domestic purpose micro wind turbine realised using bamboo blade is tested for the power generation at an interval of two years and compared the performance. A CFD analysis of turbine with five blade system is carried out for an average wind velocity of 2.5m/s and structural integrity of the bamboo blade unit based on the pressure distribution is assessed. For the input wind velocity, a stream lined out flow of 5.9 m/s is found when wind turbine rotates at 300 rpm and corresponding pressure distribution is found to be maximum at the expected location of blade tip as 129 Pa. The static analysis shows a good margin. For 2.5 m/s, the wind turbine generates an average value of 3.8V with 0.25A (based on 15Ω/ 10W load). The wind turbine has produced nearly the same power even after a period of two years.

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