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DESIGN, SIMULATION AND CONSTRUCTION OF A HELICAL SAVONIUS ROTOR FOR POWER GENERATION IN RURAL HOUSING

In this work a detailed study of a helical Savonius rotor (HSR) was investigated to obtain the optimal characteristics for the generation of renewable energy. The designed and assembly of the HSR was developed in a CAD software. Simulations of the interaction between the flow of air and the HSR blades were developed through finite element analysis. Results of these simulations shows the velocity distribution of the profile designed blades. In the same way, it was obtained the profile pressure due the velocity's profiles. The formations of vortices were studied with the finality to improve the performance in the HSR. Simulations results show the best geometry to optimize the power coefficient (Cp) in the HSR. From the simulation results it was built a prototype Savonius wind rotor at scale and probe in a wind tunnel according to simulation done; field tests will be performed to check the amount of energy obtained with the changes implemented.

Keywords

wind energy, power coefficient, off-grid system, energy storage.

Reference

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