Self-Sustaining Streetlight Post

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The objective of this research is to design and construct a street self-sustainable light post, using a Savonius Wind Turbine, which will allow the transformation of mechanical energy into electric energy. The problem to solve is: Can we construct and integrate a Savonuis Wind Turbine into a street light post by taking energy from the wind, to generate the necessary electric energy to turn on the light bulb? The hypothesis established that it is possible to design, construct and integrate a Savonius Wind Turbine into a street light post, to take advantage of the energy provided by the wind and turbulence produced by the cars moving in the highway, to generate enough electricity and turn on the light bulb. As part of the methodology, we designed and constructed a turbine with recycled materials, and integrated it to a streetlight post at a small scale. The constructed streetlight post was tested on road #5 between Naranjito and Bayamón cities. The system was tested with different types of vehicles and a voltmeter was used to measure the generated voltage. This model has an advanced lighting system that although the posts do not have enough stored energy to illuminate the road at night, they may illuminate the way to vehicles that pass at the time. The results obtained evidenced that a voltage was generated with each type of vehicle. The generated voltage had variations during the 10 seconds period of the test. In conclusion, it can be established that the hypothesis was accepted.

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