Generating an Electrical Power System from a Static Bicycle

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Electric power is essential for human development and daily activities. Its importance has prompted systems development to generate it efficiently and supply a large demand. However, its primary origin from non-renewable sources has led to global warming and environmental degradation. Therefore, my project consists of designing and constructing a prototype to generate electricity from a local area in an economical and renewable way. First, using a bicycle gear system, I coupled the bicycle to a car alternator. That way, when pedaling, the alternator begins to generate a current that then passes to a voltage regulator to control the charge and then be stored in a battery. Finally, I adjusted an inverter responsible for receiving the current and transforming it into an alternating current. Once completed, I tested the charging capacity and the prototype's revolutions in the school by taking a sample of 30 students from the soccer teams where each one pedaled for one minute. As results, I found that the system managed to achieve the revolutions to generate 35 amperes representing about 400 watts of power. The voltage fluctuated from 11.6 to 12.6 volts. It was able to power two 100-watt televisions and a 200-watt laptop. In conclusion, the prototype proved to be practical, given that it is economical and contributes to the solution of climate change. It could be implemented in gyms and homes where there are bicycles, and while the individual is exercising, generates energy.

Awards Won:

Edison International : Third Award of $1,000