

Energy Generation, 3/17/2013

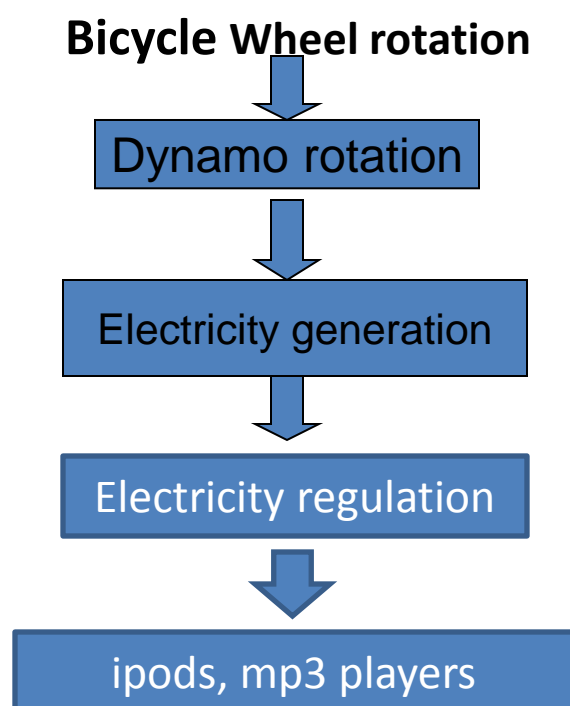
“Team : Alex Ponimaskin, Camy Crespo”

Problem Definition

- Statement: Human power generation while biking
- Scope: Integrate power generator with voltage regulator, and USB output onto bicycle to make a charger for iPods and MP3 players.
- Schedule: 3/14/13 – 3/17/13: Complete prototype
- Resources: Web resource, Bicycle, Power Generators' datasheets, Jumping wires, USB extension, Time

Solution Specifications

- Block Diagram



- Operation Description: As a person pushes pedals (bicycle), generator starts generating electricity, then electricity goes into a regulator which doesn't let to exceed max allowed level of amps and volts in the electronic device as it starts charging.
- $0 < m/s < 3.77 \rightarrow$ generates: 0-4.85V and 0-0.3A, which is not enough for charging; $3.77 \leq m/s < \infty \rightarrow$ generates: 4.85-4.99V and 0.3-0.5A, which let us charge mp3 player or ipod.
- Component Specifications (prototype): X Factor 3-Inch Generator Light Set, zippers, jumping wires, NightFire Fixed DC Voltage Regulator Power Supply Kit (+5v), USB extension, bicycle.

Competitive Analysis

- There are many similar products which offers power generation during exercising, but most of them are stationary, and too heavy to move around. The most interesting are 440 Watt Regulated Pedal Power Bicycle Generator for iPod, Cell Phone, Portable TV or DVD player, and Pedal Power Exercise Bike Generator AC/DC - Emergency Power 12vdc and 110v ac power

Potential Applications

- The main purpose for this project is to provide the system which would generate electro energy during biking and would be used for charging mp3 players and ipods.
- Since these systems will be portable and could be set up on any bicycle, the potential customers for these systems would be all people who own a bicycle

Future Improvement Ideas

- Might be improved by making it more portable through decreasing size with rebalancing main parts, or substituting with equivalent but smaller parts.
- Changing generator with voltage regulator to more powerful if more energy is needed for other device, or less powerful, which ever will be needed
- Creating an additional output, which would increase functionality