Project - Windmill Generator

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In this project, you will design a clever circuit to simulate a simple windmill generator which can be used for charging batteries or any desired electrical loads.

You should do:

1. First of all, design the circuits schematics, calculate the parameters of the devices and run simulation in Multisim.
2. Secondly, build your circuits in the provided Bread Board, debug and run your circuits and then get your TA's assessment.
3. Finally, give your calculations and analyses, state the function of the circuit and finish your reports.

Requirements:

1. You can use some ordinary components and LEDs, motor, 555 timer. Microcontrollers like 51, PIC are not allowed.　(https://en.wikipedia.org/wiki/555_timer_IC)
2. In your design, the motor windmill does not rely on the wind directions rather responds equally well and efficiently regardless from which side the wind may be flowing
3. It may be imperative to include some kind of stabilizer circuit across the output of the motor, since the wind speeds could be fluctuating and never constant.
4. You cannot connect the windmill output with the load directly without a boost or buck circuit.
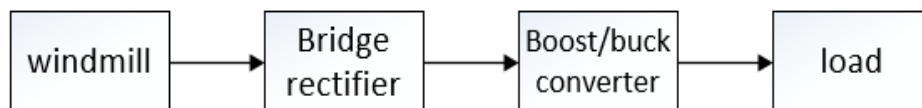
In your reports, you need to write down the difficulties you encountered during the project and your solutions. You should also list the disadvantages of your circuits and come up with some possible ways to improve it.

Some other functions will contribute to higher scores.