

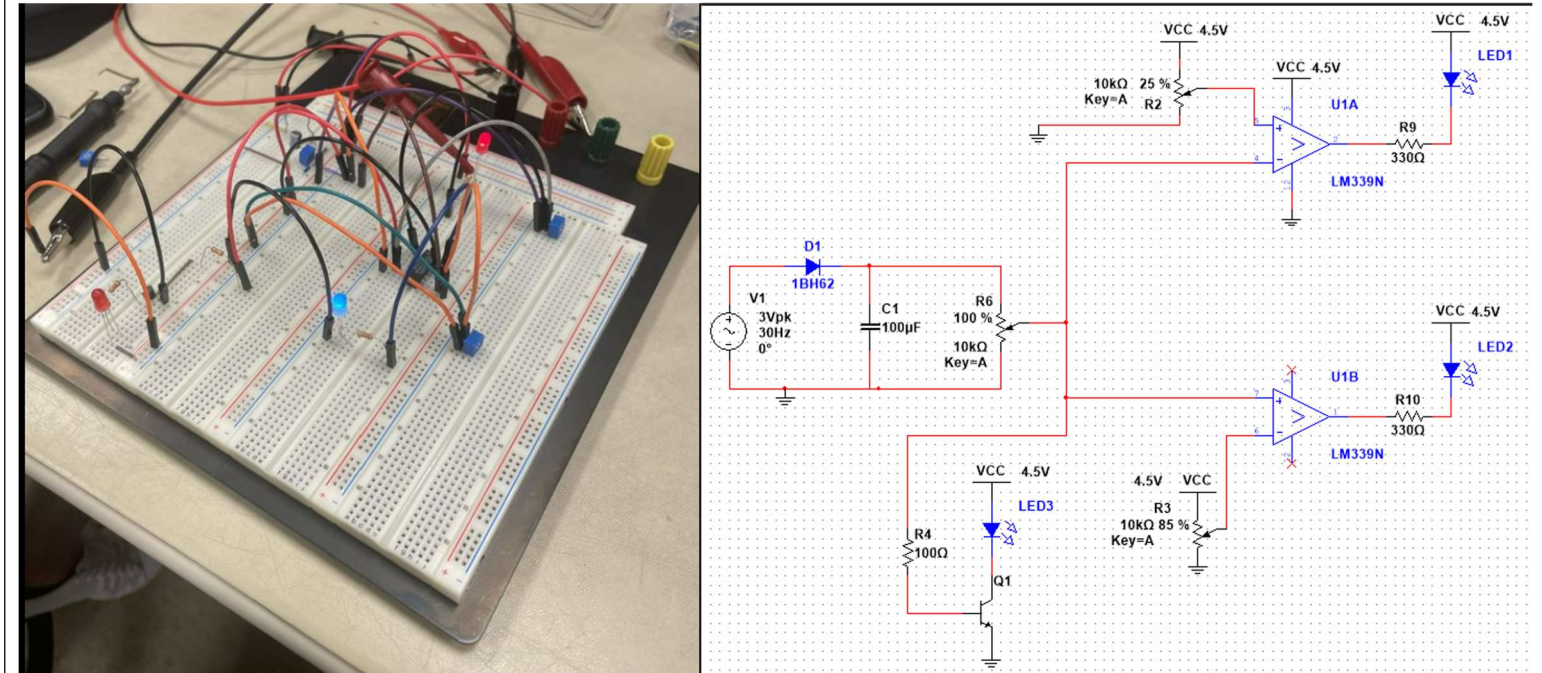
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Functionality

clear and explicit articulation of design objectives, e.g., what does the system do?, how does it work?

- Convert AC voltage input into DC voltage output. This was accomplished by utilizing a rectifier circuit.
- Light to indicate that the windmill is spinning to quickly
- Light to indicate that the windmill is spinning to slowly
- Both light indicators were constructed utilizing comparators
- Light whose intensity varies with input voltage
- The light intensity was constructed using a transistor
- The system should take an AC input voltage generated by the windmill and convert this signal to DC voltage. Based on the intensity of the signal, one of two LED's should turn on or off. A third LED should change in intensity depending on the input voltage (i.e. how fast the windmill is spinning).

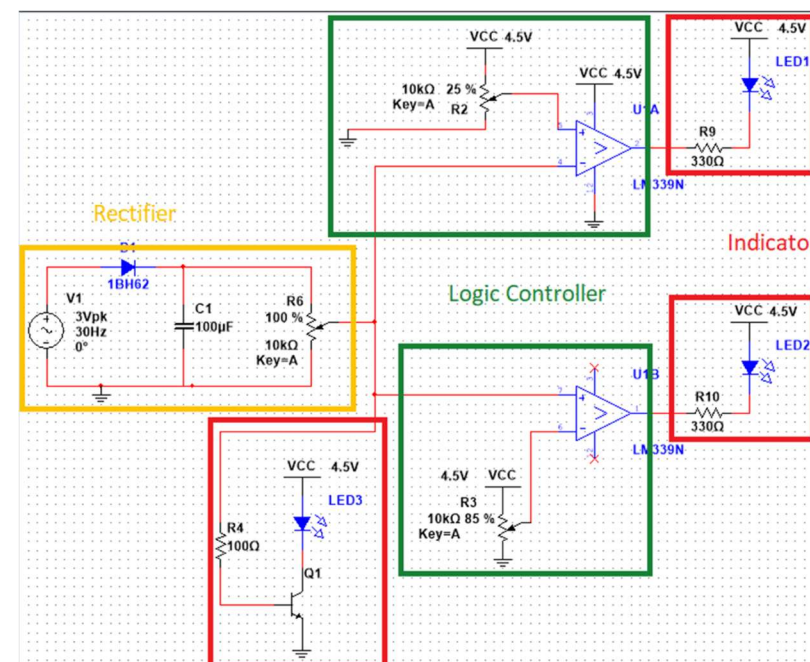
image or schematic of assembled product, circuit diagram(s)



Design Overview

components used, justification of decisions made, methods used for measurement, control, signal processing, etc.

- Components: Diode, capacitor, potentiometers, resistors, LED's
- We utilized a diode in the rectified circuit to cut off the AC input voltage.
- We used capacitors in our rectifier circuit to smooth out the rectified signal.
- We utilized comparators as they function as logic controllers which can compare the rectified signal to a reference voltage.
- We utilized potentiometers as voltage dividers to reduce the rectified voltage to a usable voltage.



Reflections and Conclusions

difficulties encountered, lessons learned (what would you differently? what mistakes were made?), future work, conclusions

- One of the main mistakes we made was incorrectly ground our circuit.
- We found it difficult to set the potentiometer limits and the input voltage into the comparators.
- If we could do something differently, we would have used resistors rather than potentiometers as voltage dividers. The potentiometers were hard to work with as it was difficult to set the potentiometer resistance percentage in person.
- Our circuit somewhat functioned as we would expect. However, it is somewhat unreliable. One of the LED's that should fully turn off only dims. If we had more time, we would be able to fix this issue.