HydroTesla

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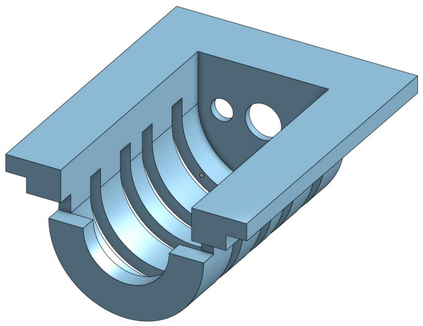
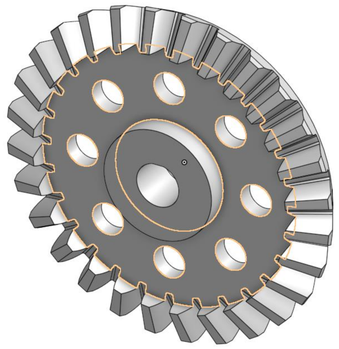
Backstory

Initially, we had two project ideas: a water powered car, and a railgun. We decided to go with the water powered car (now named HydroTesla) mostly because a railgun would not be safe to work on in a school. Although a railgun would have been super fun, there is no way it would've been approved. We anticipated that this would be a big challenge, and it definitely was. We worked down to the last day on this project.

Custom Prints

We used OnShape to design and print 3 custom parts. A custom motor holder to stabilize our motor, and 2 gears to create our gear system. Combined, these custom parts allowed our car to move.



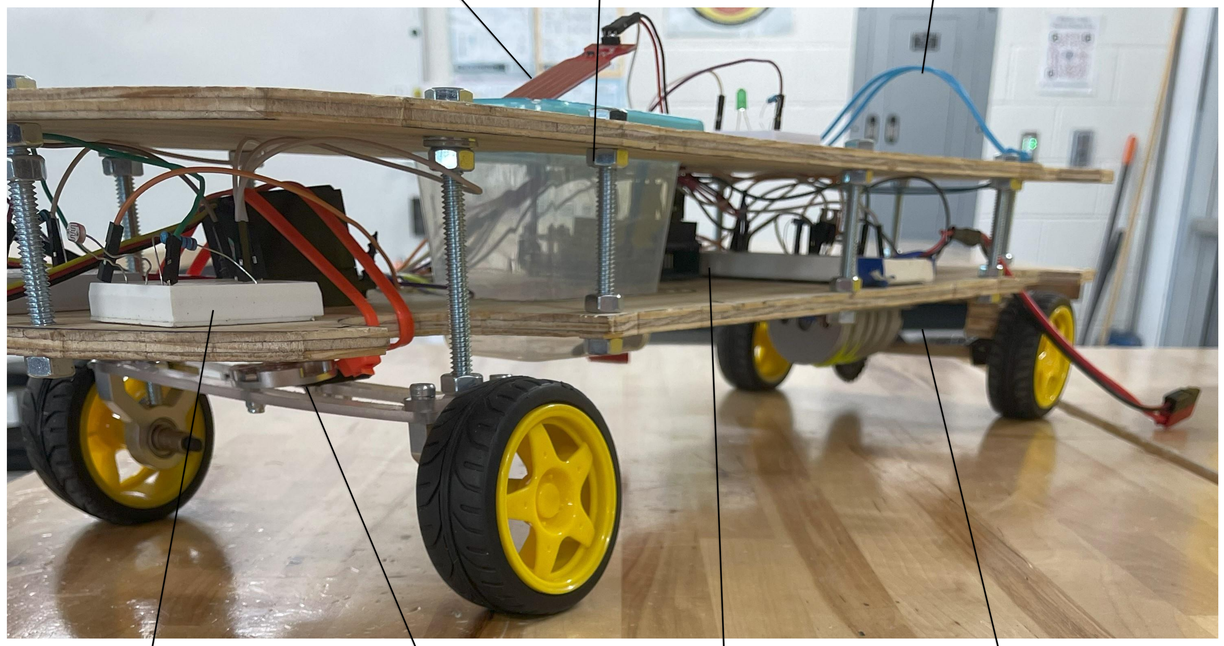


How it works

The water board sends an analogRead signal back to the arduino, and if the signal is big enough when put into water, it turns on the LED and motor.

Water Tank where water board is put into.

The battery is held here, and it is connected to the breadboard via Anderson PowerPole Connectors. This powers the whole car.



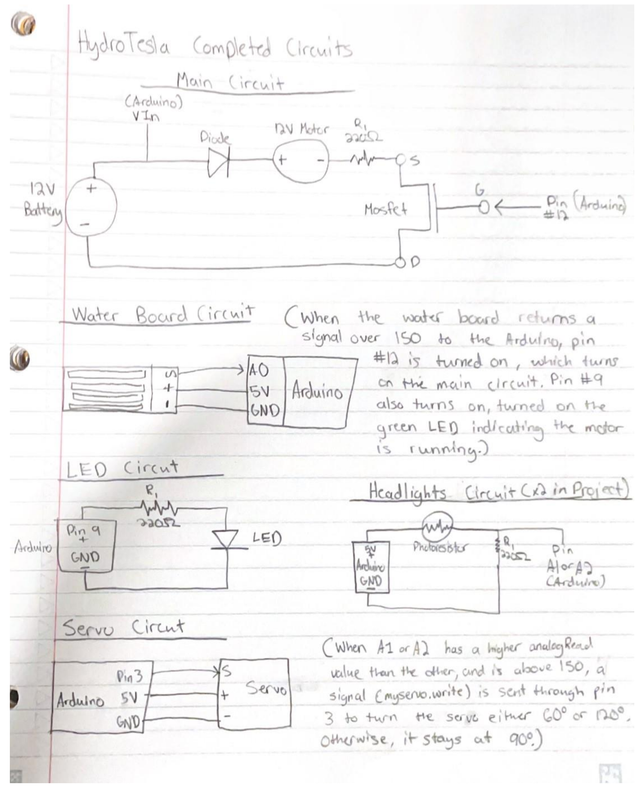
There are two photoresistor headlights here. They are constantly sending a signal back to the arduino board. The signal goes up when a light is flashed at it. If that signal is over 150 for one photoresistor, the car will turn towards the light.

The servo is connected to the front axel. It receives a signal from the arduino, telling it what to do and where to move. This is how the headlights control the steering, because they send a signal to the arduino that is then sent to the servo.

Arduino Uno (main computer) and main circuit.

The motor is connected to our gear system, which is connected to the back axel. When the motor is activated by the water board, the motor spins. This spins the gear system, which makes the back axel turn. This is how the car moves!

Wiring Schematics



Conclusion

Overall, we had lots of fun with this project. It for sure was a challenge, but we know that from the start. There were many points where we didn't think we would finish in time. Sometimes we didn't think it was possible. Multiple wiring components were overheated and destroyed. Mistakes were made, but in the end, they were for the better. We learned many lessons during this project, but two stood out to us:

- Always believe in yourself
- Stay calm, otherwise you won't think straight or get any work done

To future students, our advice is this:

- Plan out deadlines and dates, and stick to them. Do not put anything off until the last minute
- Keep a calm head. Getting angry doesn't help