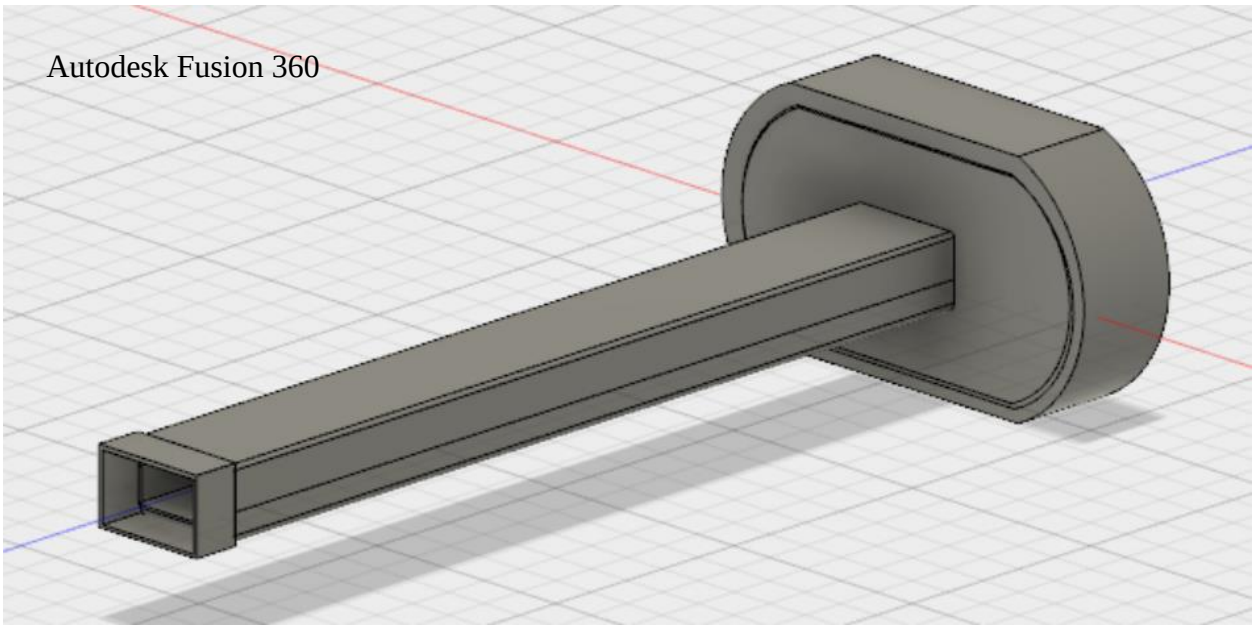
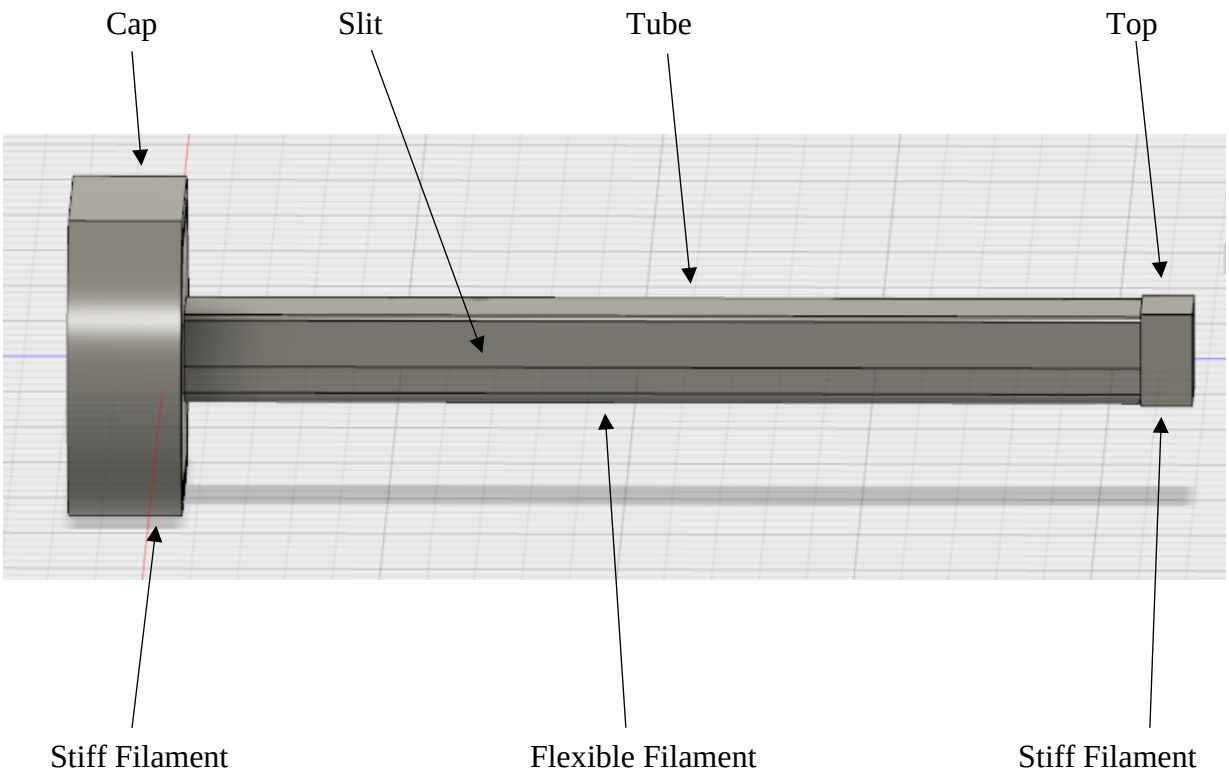
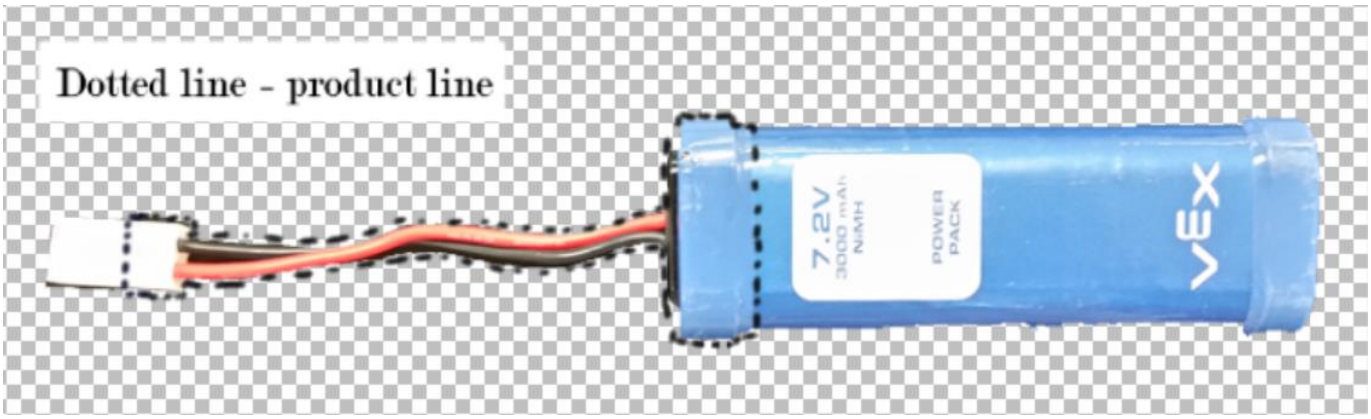
Noah Garon

Battery Protector

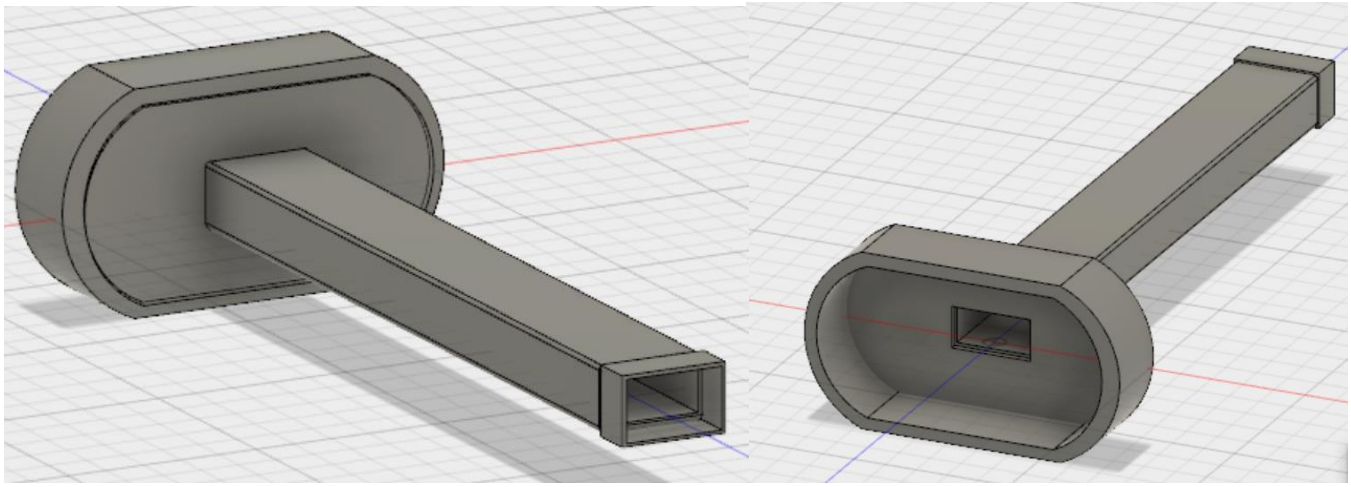




Application on the battery:



More images:



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Final Report

I created this product in order to address battery damage. While in use the two wires tend to split from each other as well as break on the two stress points, the wire connecting into the battery and into the piece that connects into the microcontroller. Often our robots have stopped working in competition because the wire has broken a connection from either side or in the case of our older batteries; both. This has ruined presentations and made us loose competitions, and until there is a solution it will continue to plague our team.

This piece is used to be placed on the 7.2V 3000 mAh power pack. It fits around the top of the pack, the wires and the battery connecter to the microcontroller. This product is made out of three distinct sections; the cap, which goes around the top of the battery, the tube which goes around the wires, and the top, which hold the piece that connects into the microcontroller. The cap and top will be made out of a firm filament but the tube will be a flexible or fabric like filament in order to allow for the wires to stay bendable. To use, one pushes the white connection piece up the tube. The flexible material and the slit in the tube allows for easy insertion. Since the cap is connected to the tube pressure will be taken off of that stress point. The 3D printed fabric will keep the wires connected. The piece around the battery connecter will provide support for the connection into the microcontroller.

For this project I used Autodesk Fusion 360. I first started by brainstorming, finding different issues that our team faces as well as possible solutions. I then continued by hand, drawing out my chosen idea from 6 angles with measurements. After downloading, setting up, and researching the program I dived into making my design. I started by using the sketch function to build an oval the shape of the top of the battery. I then created an oval that was slightly larger and used create to extend this the proper distance. I continued by creating a platform and cutting a hole out for the wires to come through. I next sketched and built the tube the same way I built the cap. Then I created the top as two separate pieces that locked together. After discussion with others, as one should in the design process, I realized that the design I made wouldn't allow for the white connecter and wires to fit. So I deleted the tube and top I had made and replaced them with a design that fit both pieces.

From this project I learned how to identify a problem and create a solution as well as introducing myself into the skills of CAD specifically through Autodesk Fusion 360. A robotics team can use a system like this because it can allow us to pass on designs through the years as members come a go. A 3D software can allow new students to 'dissect' and learn how the parts of any standard piece (chassis, claw, gear train, etc.) work outside of the competition build time, so when we as a team are working the new comers can be prepared. It also allows for ideas to be stored and passed down as members leave, and unlike the engineering notebook no one has to worry about handwriting or artistic ability. I hope to use this in my future career. I want to go into electronic fashion so CAD will allow me to design and show the pieces I want to make a part of my clothing. Another use in my career is 3D printed dresses, the idea being that anyone can design their own dress, a computer program then 'rolls up' the dress in the program and you can then print the dress in any small 3D printer, unroll, and you have a custom dress. This challenge has started my studies into this budding market.