MOTO-PLEXOR

Make It Real CAD Engineering Challenge

Vortex Electra

2020-2021 Season: Change Up

Samsun ITU ETA Foundation

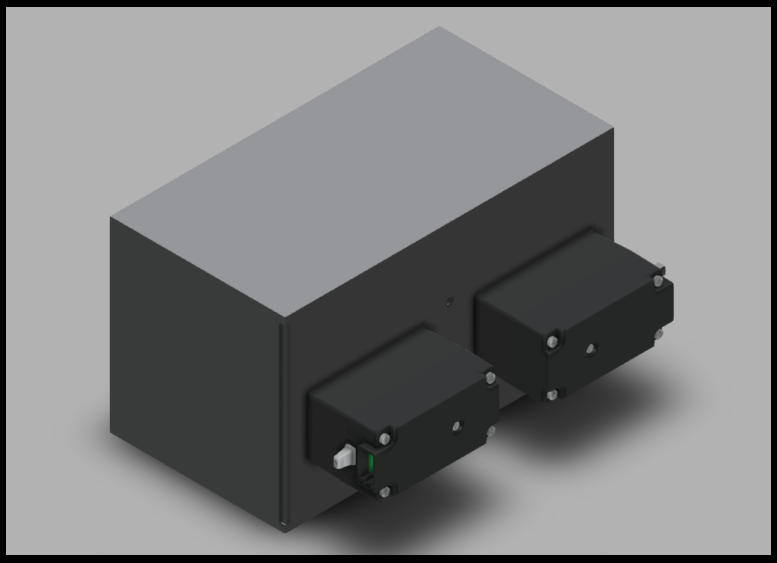
Doğa Science and Technology

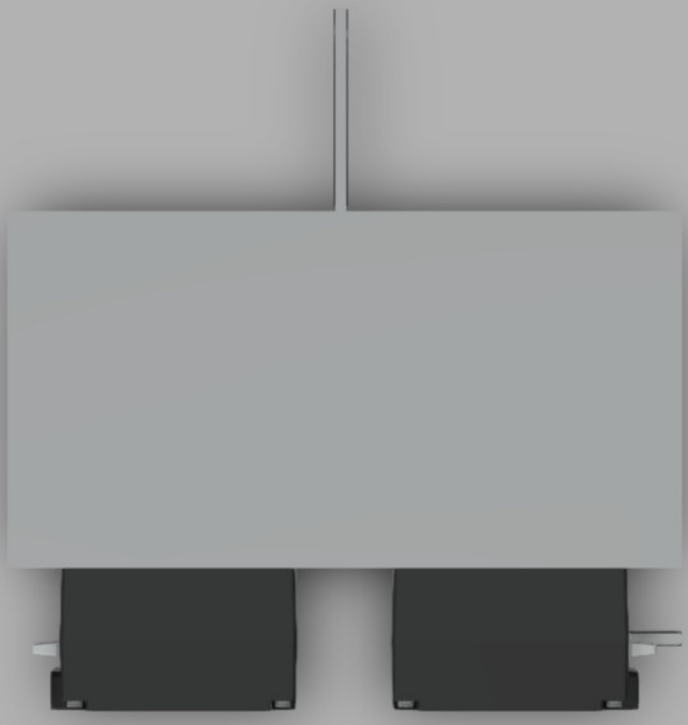
High School, Turkey

VEX Competitive Robotics Team

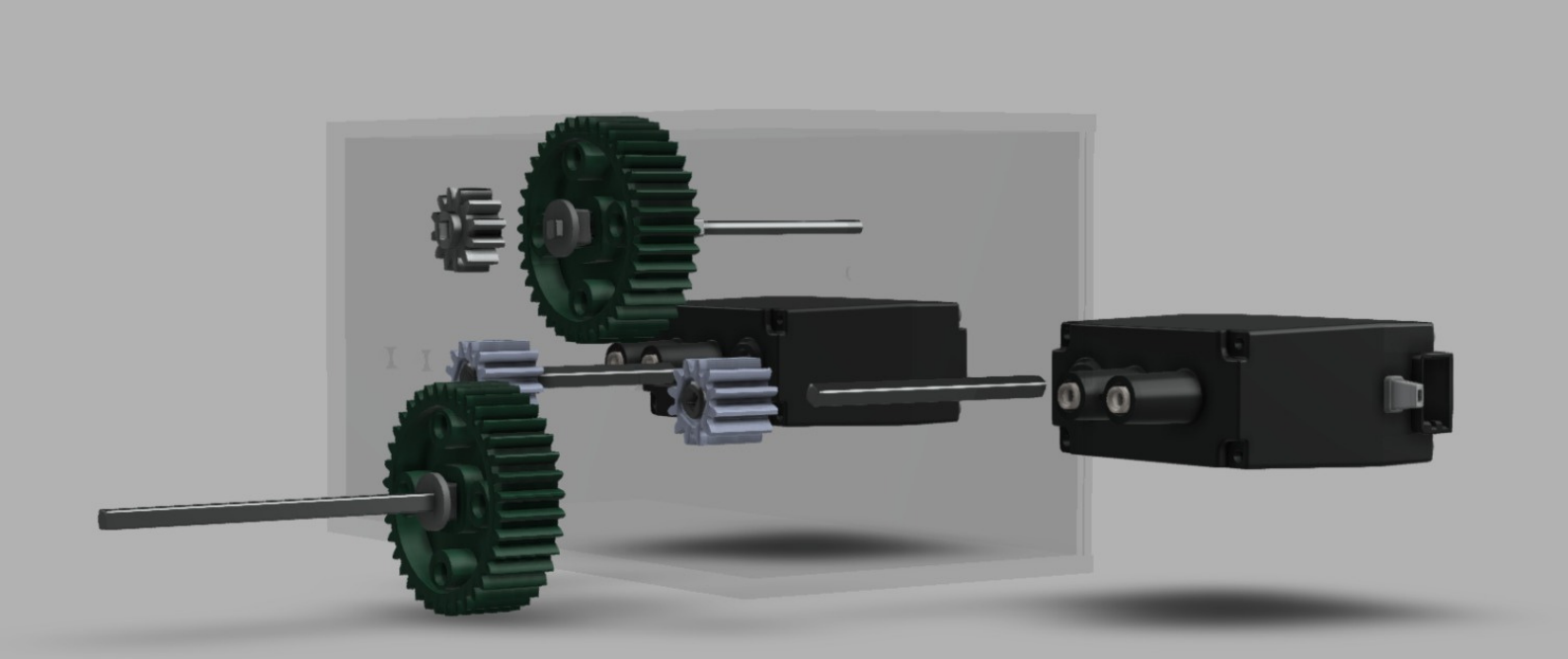
Introduction

Speed, Resistance and Power some of the important factors affecting the result in VEX competitions. During the competition, the robot's endurance when performing tasks is very important.One of the most important parts that provide these factors in Robot Designs is definitely the engines.



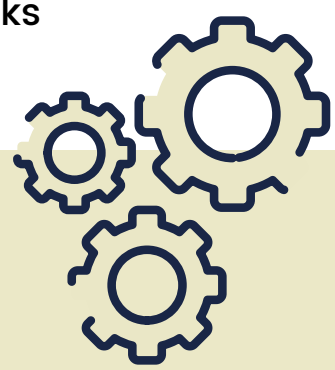


No matter how much the number of engines you use, sometimes extra power can be required. A single engine power may not be enough, especially in parts that require more power, such as the chassis. This generally leads to the need to increase the power of the engine, to the part which it connected. We were inspired by the name of our design from multiplexor. Based on the fact that multiplexor's devices gather many inputs in one place in technological tools, we have combined the engines in one place in our design. And we combined the words "Moto" from robot's engine and "Plexor" from the multiplexor device.



Functionality

In this design, was developed a transmission that make more resistant motor to connected part. This allows for a more resistance engine to drive robot and do competition tasks more effectively.



3 times

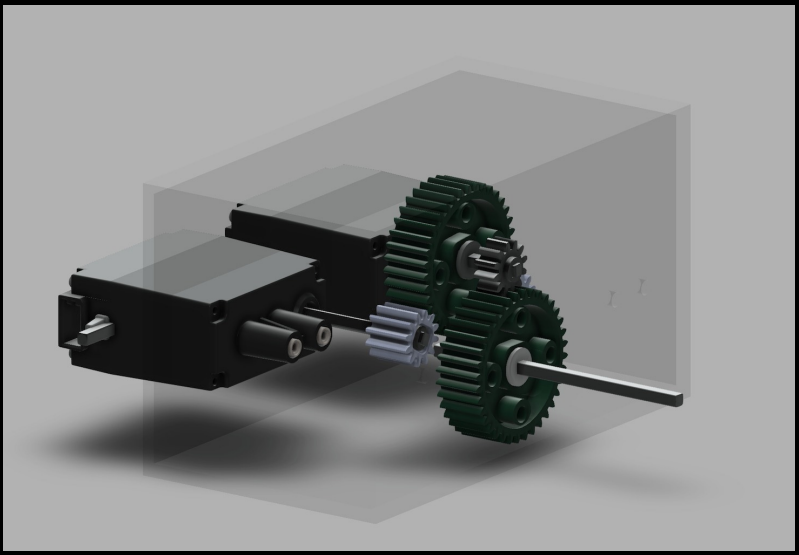
more powerful

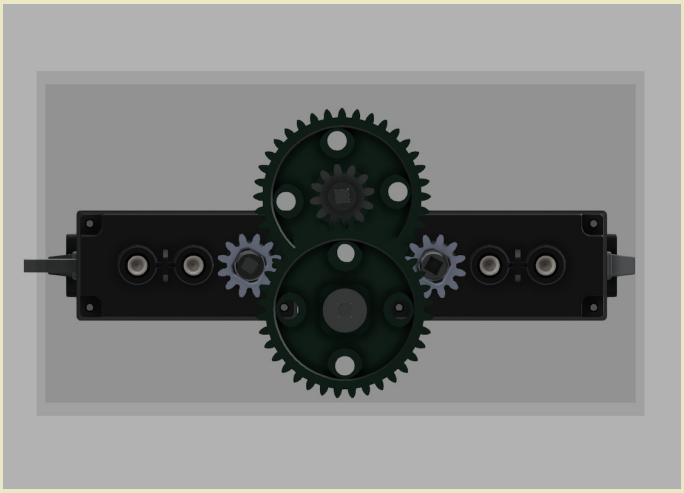
By connecting gear wheel with twelve gear tooth to the gear wheel with thirty six gear tooth we gained three times more power.

VORTEX ROBOTICS 55326V

Design

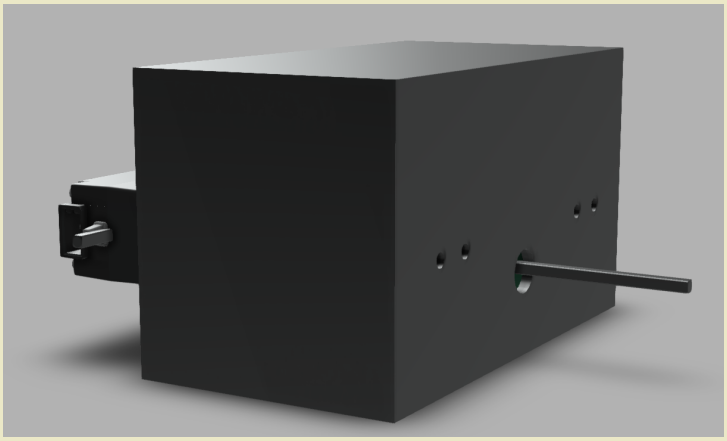
In order to create Transmission, a gear was referenced in Autodesk Inventor Professional 2021. This reference allow add gear to transmission for make power with rotational kinetic energy and bring two motor's power together. After that the other parts of design was made with Autodesk Fusion 360.





At the making progress of the transmission we used three gear wheel with twelve gear tooth, two gear wheel with thirty six gear tooth and three shafts.

By the movement of the small gear wheel, big gear wheel starts to move and mechanism begins to work.



Conclusion

From this project, we learned how to transmission effect motor's resistance. Also we developed our design skills on Autodesk Fusion 360. We tried 3D print of design on robot. 3D design software was important to make our project real. We hope that we create more new design parts with Autodesk Programs.

VORTEX ROBOTICS 55326V

ELECTRA

We, Vortex Electra (55326V), are a VRC team of six boys five girls. A lot of important feelings make us more than a team, a family.

Made by

- Ömer Yüksek
- Muhammet Emir Aydın
- Kerime İrem Pıçaklı