

Introduction

With the release of the 2018-2019 VEX game Turning Point, changes to the VEX U rules allowed for the use of VEX Pro components. This allowed us to use the Versaplanetary gearboxes in the VEXPro product line, but there was no easy way to drive these with the V5 EDR motors. The V5 EDR motors only receive square shafts while the VEXPro shafts are hex. This created the need for a way to adapt V5 motors to the Versaplanetary gearbox. This is the solution we created. Using a Versaplanetary and a 180 degree drive kit, we were able to create a motor gearbox to drive the input side of the planetary.

How the Part was used

This part could be used as a drivetrain gearbox in VEX U for running multiple motors through the same output shaft. The design was created to run three motors together, but can also be adapted to run two motors. The use of the part will save space by being able to put all the motors together in one area instead of having the motors connect directly to the axle or needing to be chained together externally. Inside the gearbox will be three gears in order to run the motors together and two sprockets; one on a shaft with a gear and the other on the output shaft.

How Autodesk Inventor Professional 2019 was used

Autodesk Inventor professional 2019 was used to design the part. Using the software enabled us to design the part to maximize efficiency in the least amount of space. The extrusion, chamfer, fillet, shell, hole, circular and rectangular pattern, and mirror design tools were used while creating this project in Inventor.

Conclusion

We have used and will continue to use Autodesk Inventor in the future. Having the ability to create a model of the robot is very beneficial when working on new ideas. I think that the use of CAD design will be very useful in the future to design and create visuals of products.