Titan Team 2990Y “Pizza Time”

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Shaft Extender

 Our custom piece is the shaft extender. It is designed to secure multiple shafts together, in order to create a shaft of custom length and strength.

The issue we will be solving with this part is the problem of custom length shafts. Our team, along with several others, have run into the problem of having too short or too long of a shaft. With this part, we eliminate that problem. Our new part allows us to create lengths of shaft to our liking, giving us the ability to connect more gears, motors and wheels together.

The way our part fits into a robot is simple. You simply slide a shaft into one end of the part, and tighten it down using a screw. Repeat the process on the other side to finish attaching it.

To design the part, we used Autodesk Inventor Pro 2020. We measured the width of our shafts using a set of dial calipers and made sure to use the correct width when designing our extenders. In total, we designed 3 variations of our extender- the square extender, the circular extender, and the polygonal extender.

Our final design has a polygon structure, giving it more strength and durability for a competition environment. Plus, due to the shape of the part, we can make shaft extenders of custom lengths for more optimization and use. Other designs we contemplated involved a circular a square design, but we ultimately decided that the polygonal design was best for this type of competition.

The ability to use 3D design software such as Inventor will be very useful in the near future, as our world becomes more connected through technology. This project helped us get a feel for the design process, and how we can use it to gain the competitive advantage in a competitive landscape such as this one.