Vex Team 3050A

Make It Real CAD Engineering Challenge: 30 Degree Gusset

We decided to make a new version of the 45-degree gusset for many reasons. By introducing the 30-degree gusset part, vex teams will have the opportunities to improve many parts of their robot from its structure to new feasible strategies which are unlocked with the new possible designs and more.

Having a 30-degree gusset could provide a lot more real estate for structures and supports on the robots thanks to its new angle. For example, a new set of 30-60-90 right triangles is unlocked for use in structure and support beams. In addition to that, many new design possibilities are created thanks to the piece. Some examples include new angled holonomic drive bases which could provide more traction going forward and back but retain some of the holonomic key features. Also, many new and exotic claws could be designed to be used for endless games and tasks.

We used Autodesk Inventor Pro 2017 to create the part. The software allowed us to make precision details to our part to make it be able to fit in with all other VEX parts. Learning how to use the software from online lessons from both the Autodesk site and other sources, the part was successfully created.

From this project, we mainly discovered the new opportunities that we now have with this very powerful tool. Being able to create our robot on the computer where no money and physical parts are needed is an amazing ability. It will be able to greatly help with prototyping

and designing our final robot giving us an edge as a competitive team for this year and much more.