VEX U- CAD Engineering Challenge

Out of Stock Solution

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When designing a part to solve a problem, we initially believed that the problem was only related to the structure of the robot. However, we soon realized that there were other factors to consider, such as the difficulty in obtaining certain VEX parts. This year, the Flex Wheels have proven to be a valuable piece in various Spin Up missions. They are used as part of the shooting systems, to pick up dics, and even to spin rollers. As a result, most teams are buying this product in various sizes and harness (30A, 40A, and 60A). Unfortunately, this high demand has led to the Flex Wheels being frequently out of stick on the VEX online store, affecting many teams. Considering this, we decided to act.

During the construction of our robot, we had some setback, and it was the availability of the Flex Wheels. We realized that the quantity of 2-inch Flex Wheels in Puerto Rico where limited and it was not sufficient for us to used. When trying to acquire more, we face the reality that it would take a long time for them to arrive or become available. As a result, we made the decision to design our own “Flex Wheel” using the resources we had. Our idea was to use the original VEX reference and measurement but make some modifications to the outer section to accommodate rubber bands and match the feel of a Flex Wheel. First, I created a sketch and used the extrude tool to give it the necessary thickness. I then used the revolve tool to remove some material and create a curved space that would allow us to place the rubber bands without them coming off easily. In addition in the center of the wheel we made an indent of .05 to utilize the hub that is used in regular wheels and gears. Lastly, I used the pattern tool for the part of the holes around the rubber. These holes enabled us to conserve printing material while maintaining the piece’s firmness. After completing the design, we printed multiple Flex Wheels to continue the construction of our robot. In testing, they worked exceptionally well in the system, and we decided to use them on both robots to improve the picking systems.

Through this challenge, we learned that sometimes we will not have all the resources to accomplish a task, but as a future engineering, our mission is to find alternative solutions to meet our objectives. By working as a team and combining our ideas, we can achieve better results in every area. We initially thought that we couldn't do anything about the problem and that we couldn't do anything about the problem and that we couldn't design a solution. However, this experience showed us that even a simple solution can be effective. If we hadn't attempted this, we may not have been able to complete our robot on time and represent our country, Puerto Rico. Similarly, we can apply this lesson to life – for every problem, there are multiple solutions. We just need to believe in our potential and use our knowledge to overcome any challenges that come our way.