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8235G Watch Dogs

Make It Real CAD Engineering Challenge

Color Changing Name Plate

Most teams know all too well how hard changing the name plates are, especially if they are having match after match with different color alliances each time. The Color Changing Name Plate was created to relieve the stress of having to pull the plates of to switch the colors around during competition. This new part can be placed anywhere that the team needs it to be, all it needs is a location to be mounted with both itself and a 9V battery holder. The plate won’t be flat since it contains LEDs and wirings. There is a clear poly-glass screen that will present the team’s number while having the alliance color behind it. There is a switch on the side that will turn the color behind the team’s name from red to blue and back.

The Color Changing Name Plate is designed in two parts, each separately made in Autodesk Inventor Professional 2017. The board area is designed to hold a bread board of a certain size while having walls to protect the sides. With the wall, there is a hole made for the switch to be screwed in, while having screw holes at the top to screw the screen and poly-glass onto the board. The screen was an incredibly tight fit, after a little file and grind, it could slide right onto the board. There are additional holes along the left and right side so the user can potentially attach it to the bot. On the front side, there is a gap set up to allow a way for power from a 9V battery to enter the Name Plate and power the LEDs. The wiring is set up on a basic series circuit with a parallel circuit to supply power to all the LEDs of their predetermined colors. During the build, it was found out that we ordered the wrong type of switch, so we improvised and set wires to accommodate the missing side of pins. After a little while of moving the wires around and finding the right spot, the colors began to glow and switch accordingly.

The program that was used to develop this part was Autodesk Inventor Professional both 2017 and 2018. Due to different types of programs depending on the year, half of the project was made in 2017 (aka. The Board) and the rest was developed in 2018 (aka. The Screen). The entry of the invention was due to an in-class assignment given to my class by our CTE Engineering instructor. Originally, there were other ideas, such as an elongated collar, but after recollecting ideas and research, it was figured out that the collar wasn’t useful. After another few days of thought and research, the Color Changing Name Plate was researched and surveyed by other fellow vex competitors. With some background knowledge with Autodesk Inventor Professional and some measurements of Vex robotics materials, the design of the project was then developed.

The Color Changing Name Plate was a great learning experience. The 3D designing will help my future of becoming a computer engineer. Learning how to create an object in Autodesk Inventor Professional could help in the future with designing for FIRST robotics and 3D printing needed parts in the future. Autodesk gives me more of a background in designing in the future, even if computer science/engineering is more coding, it can help if the future brings about a job with making and designing video games or other 3D processing programs. The software also helps with competition by us being able to have product for recruitment and it can help with making both competitions and team inventory management easier. Inventor Professional is a definite program that will be used in my future, even if Autodesk is not need, it could still be used for other applications, such as robot designing and game elements or game mechanics. Thank the reader for reviewing this project essay and taking the time to research on this invention.