

Rover Charger Group

Problem:

What if you are making a scientific research breakthrough on the moon and your rover dies on the spot? You wonder why you didn't charge it earlier or why you didn't charge it fully or why you don't have a charging spot you can just pull into like a Tesla...

Space rovers only have a certain amount of energy until they need charging. That is a problem for NASA. When astronauts are out exploring on missions, they need to be able to leave the landing station for long periods of time, however current batteries for rovers do not last long enough to allow for them to stay out on missions for those long periods.

Solution:

Our solution is to put charging stations all around the moon's surface. This could increase the time that astronaut's can explore the moon. When the rover comes back to the moon base and is ready for its next exploration. There will be two ramps on opposite ends of each other then there will be a flatspace on the top like a trapezoid shape. The rover will enter one side of the trapezoid and when it gets to the top its wheel will press a pressure sensor and a charger will go through a little space in the middle. It will charge the rover through the bottom. After it's done charging it will go off the other side of the "trapezoid" shape. The rover is ready to continue on its mission. Instead of using solar panels with the possibility of dust issues, the astronauts would have charging stations all around the moon that will charge their rovers in a more efficient way.

Learning Journey (Group Work):

In the beginning we thought that we would build a carbon battery. We realized it would cost too much. We started working on a case for the existing batteries to keep them insulated so that heat and cold would not damage the battery. We did not have the right tools to do that, so we went to a rover charger instead. We built a ramp, one side of the ramp is to go up onto the charging station the other side of the ramp is to go down off the charging station in the middle between the two ramps is what we call the floor. This is where the rover would sit when it was charging. Under the floor there would be a lift. So when the rover is going up the ramp it would touch a pressure sensor and the Lift under the floor would go up and charge. When the rover would leave the charging station and when you pull up to the charging station you don't have to get out of the rover.

Biggest MOST IMPACTFUL Hurdles/Failures/Changes/Pivots (Group Work):

One of our most impactful hurdles was when we couldn't build the carbon battery. We were back to square one. This changed us because we were at a stuck point and we had to do our research all over again, but our next idea was even better than a battery. We had to be flexible because time was a constraint. We persevered even though we were faced with a challenge.

New Opportunities (Group Work): When we decided to switch we got the new opportunity to use VEX IQ pieces. This gave us another opportunity to build the lift and the rover. This would make everything so much easier because there is no possible way to do it. Another opportunity was that we got to talk with an expert. We got real life feedback from our experts.

Liam:

When I did this project I grew more social with new peers. I also thought that I grew more responsible and accountable with my work. I got more engineering ideas from Ivan that grew my understanding about better building techniques. When I was with my group I had to be flexible and adaptable with their way of doing things and so did they with me. I look at other schools and I see what they are doing and it is so different from the work that I am doing. My friends say that they are doing math sheets every day and taking tests that they don't get graded on. I have gained a lot from doing meaningful work.

Ivan:

When I worked as a group with my teammates I realized that working with a group is hard because you have to listen to them and build up courage to ask questions. Working with Liam helped me stay focused when I got off task. I know that since I had a time limit, I grew more responsible. I also learned that when you do this kind of learning it helped me open up my mind a little more so I got more creative. When I was building the machines I had designed there were just problems and solutions and at times this was really frustrating, but my team really helped me get through those difficult parts.

Roman:

When I worked on this project I realized that not everything goes my way. Our first and second ideas didn't work, and it was hard to start at ground zero