

The ways this robot can conserve energy are diverse and effective in many areas. We needed some ideas as to how it could be energy sustaining so we used vex forums autodesk workshop to help us with the ideas, here is an overview of those areas that have an energy sustaining designed: it performs lightweighting by using less weighty materials, its cuts down on friction to keep it from using so much energy to move, and has a environmentally helpful function.

This robot's function is a ground sweeper, this job while small can have an energy conserving impact if used to the proper extent. For example if this robot were programmed to operate in a house as a ground sweeper the energy that a human would use to lift up their whole body mass to go clean up an object would be considerably more than the amount of energy that the robot might expend to perform the same task because it is lighter weight, therefore conserving energy. The design also could be enlarged to be used as a public trash sweeper.

The design of the robot is also conducive to energy sustainability. So to prepare it to fulfill this function it was equipped with a very versatile intake, this piece of equipment was important to design well so it would be able to take any small item off the ground easily and without damaged. We brainstormed some ideas and after doing our research it was evident that a rotating device would be the most efficient. After that we needed to decide whether we should use a round filled in design or a partitioned design like a wheat reaper for the intake roller. After studying the way these ideas were used in real life we determined that the partitioned plan would work best since its use in real life was most comparable to our use. Next we decided to make it with 3 spokes so it would have large areas for bulky objects that it might be required to pick up. Now that the main intake prototype was done we assembled it to test ,and it worked very well, we also used the plan of using an inverting slide to reduce the amount of energy used to run the motors that it might be used to do it in other ways. Now the drive train was designed to cut down on friction to keep from wasting energy needlessly, by using omnidirectional wheels the frame would build up less friction while turning, therefore reducing the risk

of breaking parts and wasting energy to make a replacement part.

The use of power is also used in a sustainable manner. By using it on more motors than absolutely necessary, it reduces the risk of maxing out the motors strength and drawing on useless amounts of current.

With the main structure done we decided on the materials we would use to make its main structure from. It is intended that this robot be made from sustainable elements such as recycled aluminum, which produces 1kg/3.5kg, and plastics that also take less energy to produce. By using these light weight materials we performed a function known as lightweighting an idea used when energy is wanted to be conserved, like when you use a bike you would want a lightweight frame, when the energy is conserved that helps it be more energy sustainable.