Machine design transportation part

When considering the transportation method we had a 3 main ideas. The first one was that we used a short conveyer belt. The second idea was about a long conveyer belt. And the last idea was from wigger and used a turning wheel and 2 conveyer belts. All these ideas included a conveyer belt because that was required.

The thought behind the short conveyer belt was that in the feeding mechanism would push the discs hard enough so that we could put the sensors on that part and to have a small but conveyer belt to transport the discs. The conveyer was short because nothing needed to happen on it. Thus it would only be there because it was a requirement. To us it seemed a bit useless to not do anything on the conveyers belts. So that was when the second arose.

The second idea had a long conveyer belt to put the sensors on. And also a part of the separating mechanism. The conveyer belt would limit how fast the machine can run but all the actions would happen on the conveyer belt so that time wouldn’t be wasted. It also isn’t that hard to create a long conveyer belt so we kept the idea in mind.

The idea from wigger was that there would be some sort of wheel with separate compartments for discs in the center which would rotate and put discs on to two different conveyer belts. Each conveyer belt led to a storage unit of the sorted discs. The problem with this idea was that it would be hard to prevent the discs from spinning out of the compartments when they shouldn’t while still being able to let the discs go out when they had to. Because we couldn’t get it to work the idea was dropped and we went back to the idea about a long conveyer belt.

The idea about the long conveyer belt we were capable of realizing it. But during the build of the conveyer belt we noticed that it would not be tight enough around the gears. Thus we tried to remove a small part of the belt. But this still didn’t have to effect we hoped for. So we added a third gear in the middle which tightened the belt to an acceptable state.

The conveyer belt was still far from perfect because it would tilt at certain points and the discs could fall off. So to prevent it we build 2 walls around the belt. On the first part they are low because the low walls were more robust than the high walls and for the user it is easier to access the discs on the conveyer belt. The high walls have been secured using 4 pillars because that made it robust enough to make sure they didn’t break. The walls had to be high because we needed to put a set of sensors on it.

Those sensor had to be above the conveyer belt. They also needed to be at an angle to work properly. That was required else the sensor wouldn’t be able to check if the disc was black or white.

The other set of sensors didn’t need to be place at an angle thus they were simply put on each side of the conveyer belt. This set of sensor would then be capable to scan if there was a disc on that spot of the conveyer belt. This sensor is need to time at which moment the other set of sensor had to check the color of the disc. And it is also used to check if there are any more discs left to scan.