Transforming trash into 3D-printing treasure has never been more fun!

By Michael Torres
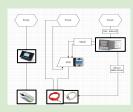
Introduction

I've discovered the entertainment industry's significant wastefulness, prompting my interest in leveraging 3D printing for producing high-value props and models. While recognizing the potential for waste through failed prints and discarded support material, I aim to counteract this by reverse engineering a PET machine and applying my fabrication skills to create a more sustainable alternative.

The most important parts on my shopping list are...

Temperature controller(s)   Motor Controller   Motor   Heating Element

Methods/Process

I intend to 3D print all functional parts using Fusion 360, enabling easy reproduction of broken or damaged components. Fusion 360's design history feature allows me to revisit and modify earlier stages, ensuring seamless integration of changes into the current version.

After exporting the models as STIs, I then imported it into Cura the slicing software that the schools 3D printers come with.

When it came to the electronic component of the project, some quick research gave me the list of parts I was going to need in order to heat up the block the plastic will be pulled from and the motor that will do the pulling as the plastic passes through.

Using my prior knowledge when it came to assembling the electronics I made sure both of the main functions were assembled correctly

First the temperature controller this components needed to be independently power in addition to connecting an additional power source that which it will use to regulate the heating element. Then second was the motor controller, wiring the motor and giving it its own power source.

So as the heating controller maintained a temperature of 180 celsius the plastic from the bottles was able to be formed into the desired tube shape. And after it is pulled by hand it is then attached to the gear system being operated by the motor and its controller.

Conclusion

Venturing into 3D modeling and printing for the first time, the experience of mastering Fusion 360 and Cure was both thrilling and rewarding with each new feature discovered. Additionally, delving into electronics beyond basic soldering projects for class assignments opens up possibilities to apply my newfound skills in advancing my goals within custom scenery construction.