

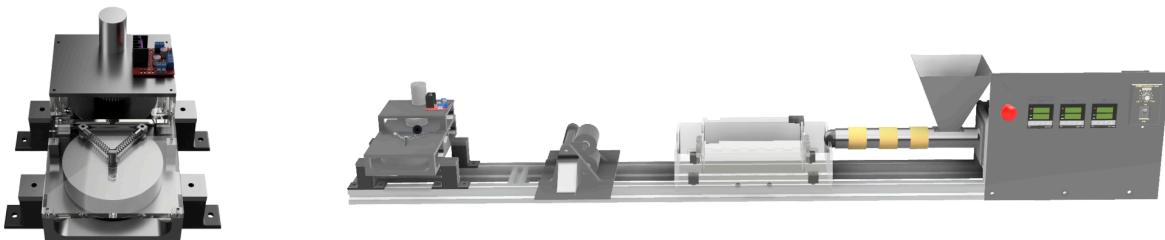
Puller optimization

Context:

The association EPFL Xplore wants to develop a 3D printed parts recycling machine. After one year of development, a first version of the machine is ready and some filaments were extruded. Nevertheless, to improve the capacity, the reliability and the understanding of the machine and its parameters, a lot of work remains to be done. This is why we offer semester projects to EPFL students. The recycling process of 3D printing filament can be decomposed in the following steps: grinding, drying, extrusion, cooling and spooling.

Project description:

The aim of this project is to design a new version of the puller. Below, on the left, a model of the actual version and on the right, the prototype of the machine.



What is called puller is therefore what pulls the filament once cooled. The actual design works but has limitations. For example, the wheels are 3D printed and hence, not perfectly circular which may induce variations in the diameter of the filament, their grip is not satisfactory and reliable which once more can affect the filament and finally, it must be fully integrated and adapted for the user, which is not the case today. These are examples of the challenge that the student would face.

Furthermore, the student will be an integral part of the Xplore Wall-E Team, actively participating in its weekly meetings and working sessions. This collaboration will facilitate close interaction with other team members, and the student is expected to share their findings and progress with the team regularly.

Tasks:

- Literature Review and Familiarization
- Prototyping
- Mechanical Design
- Manufacturing

Requirements:

- Autonomous work
- Experience in mechanical design
- Eager to learn

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