ME 498/ME 599 Advanced Additive Manufacturing Final Project Summary Winter 15

- Project Name: Hot End and Extruder Volumetric Analysis
- Team Member: Alan Ng
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- Project Description (3-4 sentences to describe your project):

The goal of this project is to experimentally solve for attributes of a hot end and extruder configuration that maximize volumetric flow rate of material extrusion. The process involves research, hypothesizing a solution, conducting experiments, analyzing results, and concluding the optimal configuration. The experiments mostly consists of testing which configuration is able to extrude at the highest speed without any mode of failure. Tested variables may include filament size, melt-zone length, nozzle orifice size, drive system, and filament material.

- Estimate percent complete as of Monday 02/23/2015 @ Class time: ~60 %

- What we have done (3-4 sentences description):

So far we have researched hot end and extruder configurations and predicted what attributes are needed to increase volumetric flow rate. We have almost all items required for testing all the variables we have chosen. Trials of testing has started. A lot of the research paper has been written, but needs formatting and of course the data and results will be added upon completion of tests.

- What problems have you encountered (3-4 sentences description):

Extruded material has shown extrusion inconsistencies, even though the extruder hobbed bolt shows no sign of filament stripping. We are not sure if this is an expected mode of failure, or an actual manufacturing defect or sign of a damaged hot end. Regardless, these observations have been recorded.

- What is left to be accomplished (3-4 sentences description):

The testing phase needs to be finished and will be simple but time-consuming. After that, all data will be compiled and analyzed in the research paper. Small tasks such as formatting of the paper and citing references will need to be done. The paper will then be reviewed and finalized, ready to be turned in.