

sdmay19-12: Automatic Solder Dispenser

Status Report 16

February 25 - March 3

Client: Leland Harker

Team Members

Jason Austin – Software Lead

Justin Wheeler – Mechanical Lead

Zachary Bumstead – Electrical Lead

Kevin Carlson – Mechanical/Electrical Integrator

Trenton Allison – Software/Electrical Integrator

Samuel Willford – Report Manager and Meeting Facilitator

Summary of Progress this Report

- Programming priming function - Jason
 - This code tells the stepper motors to extrude until solder triggers the light sensor
 - Code was finished but not tested (since sensor board was not ready)
 - Troubleshooting sensor board and housing - Trent, Sam, Zach, Justin, Jason
 - Tried several variations of sensor housings
 - One was drilled from a plastic block
 - We hoped this simple design would prove more effective
 - This gave us worse results than the previous 3d printed versions
 - Another was 3d printed with different sized holes
 - This version came close to working, but one of the sensors still did not function correctly.
 - A second sensor board was soldered (identical to the first) to allow us to test other housings without taking our best-working one apart
 - The ultimate problem is that the amount of light getting through is varying too much
 - Our advisor suggested opto-isolators, we will look into those
 - Electric signal solder testing - Sam, Zach, Justin
 - A new type of sensor was tested to detect jams
 - The extruder was grounded, and the cutter blade was connected to a 1Mohm resistor, with 3.3V on the other side.
 - Pi would measure the voltage on the cutter blade. If it reaches 0V for a short time after extruding, then the solder was successfully cut
 - This sensor seemed to work well
 - One drawback is that it can't determine which spool jammed
 - This sensor would make a great backup plan if opto-isolators don't work well
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Pending Issues

- None at this time

Plans for Upcoming Reporting Period

- Create and test a schematic using opto-isolators - Trent, Zach
 - If it works well, we'll use this as the new sensor board
- Cut lid and install screen - Kevin
 - Lid of box needs to be cut on mill
 - Need to be careful (We only have 1 lid!)
- Create code for retracting solder - Jason
 - When inserting a new roll of solder, the stepper motor must initially "calibrate".
 - After each use, solder may need to retract a couple inches to avoid jams.
- Install extruders on other 3 stepper motors and mount motors in box - Justin
 - Currently waiting on the stepper motors to arrive
- Finish mounting spool brackets in box - Justin
 - Spool brackets have already been created and need to be mounted in box

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Sam Willford	Report 15, created and tested new electric signal solder sensor	8	148
Jason Austin	Creating new sensor housing, programmed priming function	9	161
Trent Allison	Soldered a second sensor board, troubleshooted sensor boards	8	138.5
Justin Wheeler	Made a sensor housing, assisted with electric signal solder sensor	5	128.5
Kevin Carlson	Design reinforcement and mark/drill mounting holes	3	89
Zach Bumstead	Assisted with electric signal solder sensor	6	109

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