sdmay19-12: Automatic Solder Dispenser
Status Report 16
March 3 - March 17
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

- Used Inventor to model the screen hole in the lid & mounting brackets - Kevin
  - The model will be cut on the mill, testing it with a scrap piece
  - Mounting brackets will hold the screen in place

- Used Inventor to model output tube - Sam
  - The output tube will be cut on the mill
  - Simple design, will be cut to appropriate length later

- Troubleshooted photoresistor/LED PCB - Trent
  - A second board was soldered to determine if the same issues would arise
  - With the second board, 2 of the 4 photoresistor/LED pairs worked
    - We concluded that we should move on from this design

- Soldered driver board Revision 3 - Trent
  - PCB arrived and was soldered
    - Mild troubleshooting was involved
      - Had to resolder 2 driver chips

- Extended stepper motor wires & added connectors - Sam, Trent
  - One stepper motor had a different connector than the other
    - Connector was replaced
  - Wires were extended, connectors were added to two steppers
  - Same color schematic for each

- Design housing/cover for opto-isolators - Justin
  - This will be milled and will ensure that the environment does not affect the opto-isolator performance
  - Design was finished, PCB needs to be created according to the design

- Designed and tested a schematic using opto-isolators - Trent, Zach, Sam
    - Worked more accurately than photoresistor and LED sensor board
    - Could detect both sizes of solder through the tube.
    - A perf board with the opto-isolator design was soldered

- Designed opto-isolator PCB - Zach
    - Worked with Justin to ensure holes were in the right spot
    - Based off schematic that was tested

- Safe shutdown implementation - Jason
    - Pi safely shuts down when it loses power, sending an email to ETG first
    - Push button needs to be installed to turn PI back on after power is reconnected

- Installed extruders on other 3 stepper motors and mounted motors in box - Justin

- Finished mounting spool brackets in box - Justin
    - Spool brackets had already been created and needed to be mounted in box

Pending Issues

- None at this time

Plans for Upcoming Reporting Period

- Connect extruders to coiler and cutter via tube
    - Test to ensure solder can travel smoothly
    - Ensure coiler does not cause jamming

- Finish software
    - Add database resetting option in administrative page
    - Resize buttons, add color if possible

- Add reset pushbutton to box
    - This button will reset the pi if power returns quickly
        - Only needed when power returns before the capacitors drain

- Test open-box sensor and functionality
    - Need to ensure the software is present for this

- Get acrylic piece bent for 45 degree slant
    - The box will need to be at 45 degrees in order for solder to slide through the output tube

- Solder and test opto-isolator PCB
    - Ensure code for priming and retracting works also

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Sam Willford	Report 16, worked with Zach on opto-isolator design, extended stepper motor wires, created output tube drawings	18	166
Jason Austin	Safe shutdown implementation, debugging sensor board	11	172
Trent Allison	Soldered a second sensor board, troubleshooted sensor boards, solder new driver board	22	160.5
Justin Wheeler	Designed opto-isolator housing and worked with Kevin on lid placement	14	142.5
Kevin Carlson	Designed hole in lid for pi screen, along with brackets	17	106
Zach Bumstead	Tested opto-isolators, created opto-isolator PCB	21	130