Work Completed

This week we saw the finalization of our two designs. Extensive work has been done to finalize the designs of our two projects. We are still waiting on multiple parts orders for our monitor lift. Two weeks ago the guide rails, mounting bracket, and linear actuator were ordered. We have held off on the construction of the monitor frame and housing box until we receive the parts and can gauge a little better how things are going to fit together. Below is a picture of the mounting bracket ordered as well as the linear guides:

![Picture 1.1- (left) mounting bracket that will adapt to our linear actuator, (right) guide rails that will support our vertical motion (function later diagramed and explained).](image)

The bracket that was ordered will adapt our linear actuator to whatever housing unit we create.

During this week we finalized the design for the housing unit of the monitor that will be adapted to the bracket seen above. Various metals and thicknesses were researched in the workshop this week. It was decided that steel with a thickness of between 1/8 inch and 1/16 inch would be suitable for our application as well as workability.
Depicted below is a collective interpretation of what we assume the housing unit will look like after construction. One can see the integration of the steel housing box as well as the guide rails. The other diagram is how the box will be constructed that will house the monitor.

Figure 1.1- (Left) shows the guide rails mounted to the stationary wall as well as the linear actuator behind the wall, (Right) depicts how the steel will be cut and folded to achieve a housing box. An integrated depiction of the box and the lift can be seen below.
Extensive testing has been going on regarding the construction of the paint cap remover. The crucial piece to the puzzle is the creation of a subunit piece that will accept the paint cap into it as well as be mountable onto the motor head. Over the past week we have tested various epoxies as well as setting times and curing times. The process that was deemed to be the best for our design needs is listed below:

Cap Head Subunit Construction

1. Mix Epoxy
2. Let stand for 2 minutes
3. Place Cap head into epoxy so that the top of the cap is level with the epoxy
4. Using a thin utensil push epoxy into the teeth of the cap
5. Let sit for 15-20 minutes
6. Remove cap head with needle nose pliers
7. Let epoxy sit in basin for 24-48 hours to allow for complete curing
8. Remove outer basin
9. Shape epoxy into desired shape adaptable to the motor mount

Below one can see Step 5 taking place as well as Step 6

**STEP 5**

Picture 1.2- Epoxy used is on the left in the picture and the setting epoxy is on the right with the cap head imprinted within it.
Picture 1.3- Depicts removed cap head with epoxy imprint in center. Must now sit for approx. 24-48 hours to fully harden and really achieve defined teeth imprints

Thuy is currently working on a circuit that will adapt our switch into the design of our motor. A test of the motor and the epoxy subunit was conducted using this created circuit and it worked with the exception of the motor not having enough torque. We are still waiting on the new motor but because of the prep work we have done to date it should be a simple switching out of the motors and possibly changing a resistor or two in the circuit.

**Future Work**

Future work will consist of integrating the new motor into the already created circuit and switch. The next step is to design a housing box for the entire unit as well as creating the uprights to hold the tube within them. We must also finalize a set of epoxy subunits that can be used and adapted to the new motor head.
Concerning the monitor lift, we are waiting on the linear actuator so we can design the base unit as well as the housing box. We must also test the strength of the linear actuator as well as the internal switches that we were told are included and already installed within the actuator itself (firmellaauto.com). This upcoming week will focus on one or the other depending on if we receive the new motor or the linear actuator and its guides and brackets.

**Hours Worked**

In Lab: 7

Out of Lab: 5

Total Hours Worked: 12