

Progress Report 2

Design Team 1

Jeli Joegiono

Kyle Coveart

Vinod Natla

Ryan Everaert

There has been significant progress on our project since the writing of our first progress report. Initially, the display and audio portions of the project were functional, but they were running off separate PIC's. The week of November 5th, we wired the audio and display modules to one PIC. Once successfully wired, we then had to write new code to have both systems cooperate properly. This was achieved in the same week. The following week, we added another switch to the configuration. The purpose of this new button was to summarize, through the system speaker, the current length setting of the machine. This was successfully wired and coded for in one evening.

However, also in the week of November 5th, we ran into a snag involving our Green Monster stepper motor. We chose to purchase the Green Monster because of its large torque rating after concerns had arisen about the speed capability of our design. Upon implementation of the motor, the device drew large currents, causing our driver chips to function erratically. We then ordered new stepper driver chips with more than twice the amperage tolerance of our previous drivers. The new chips arrived the following Tuesday, November 11th. Unfortunately, even the new chips could not handle the current the motor was attempting to draw. We tried putting resistors in series with each phase of the motor to reduce current draw, but the power rating of the resistors was not sufficient, and the resistors were destroyed. We obtained resistors with high power ratings from our sponsor and will attempt to drive the Green Monster with them in series with each phase. Should this approach not afford us control over the motor, we will pursue an alternative involving two of the stepper motors our sponsor donated to us. We will run them in parallel to achieve higher torque.

As far as the mechanical structure of our design is concerned, all that is left is to mount a motor to drive the movable clamp, which cannot be completed until our team decides on a motor to implement; all other mechanical work has been completed by Mr. Blosser, aside from any minor adjustments that may need to be made in the coming two weeks.

Preliminary work has also begun on our printed circuit board layout using ExpressPCB software. Finalizing this step of our project is obviously dependent on the progress we make with the final wiring, as we have yet to wire and program our second PIC to control our DC gear motors.