

Minutes from 2/1/12

Present:

- Bradley Ling
- Brad Olan
- Sabine Loebner
- Rob Hughes
- Bill Nowak

Meeting was held in the Senior Design Center from 4-5:30 PM

1. Rob Presented results from ANSYS model of plastic lead nut. The maximum stresses were 1-2 orders of magnitude lower than the yield point of the material, meaning plastic lead nuts seem to be a feasible solution for us.
2. Rob Presented some findings on possible gearboxes to achieve the resolution requirement. The gearbox is \$220 with a gear ratio that can be selected anywhere between 1:10 to 1:120. The output backlash is 0.5 deg. Brad L raised concerns about the backlash, that it is about 14x larger than our resolution spec. This would make the system very user unfriendly
3. Sabine presented a microstepping solution that could be implemented with a microcontroller and a \$20 chip. This would achieve 1/16 stepping. We decided we need to determine the +/- degree error in the microstepping solution.
4. We are planning to do a cost/benefit analysis of gearing vs. microstepping on Monday 2/6. We will have good cost values and pros and cons for each system to determine which configuration gives us the best performance for the cost
5. Brad O showed his improved actuator design. Brad O did preliminary moment calculations, and determined that the max weight of the cylinder and mounting system is 1 lb per axis. If we need to go higher Brad O stated that the next step up in rails has 10x the moment capacity. We also discussed the mounting fixture, with Rob recommending a minor change.
6. Bill reviewed our SDR grades with us. He provided a few recommendations that are listed below:
 - a. Highlight long lead parts in detailed design review
 - b. Reexamine specs after system design and again after detailed design
 - c. Create better system sketch