# **MTRL 466 MEETING MINUTES**

| **Project Name:** | Adaptive Architecture |
| --- | --- |
| **Group:** | Sinclair |
| **Current Meeting:** | October 4th, 2013 |
| **Minutes Prepared By:** | Ted Hung/Juan Gerardo Ellorin |

Attendees:

Chad Sinclair

Vicki Pistner

Jeremy Leung

Lauren Day

Juan Gerardo Ellorin

Ted Hung

Kush Shah

Agenda:

Recap of last week’s action items

Group progress summaries

Bi-materials

Shape memory materials

Lifecycle analysis

Midterm report and presentation

Goals for next week

Last week’s action items:

* Get simple calculations of room heating up
* Write up a blurb explaining (with a stress strain diagram) how SMA can utilize springs.
* Compare energy usage between bimaterial and SMA
* See if solar panels can provide enough power for constant activation of SMA hinge
* Have report draft ready by next week and give to Chad for feedback
* Check with Dan about report deadline and ways of handing it in
* Find out time limit for presentation
* Jeremy - Meet with Greg to get samples from him

Minutes:

* Get simple calculations of room heating up
* Write up a blurb explaining (with a stress strain diagram) how SMA can utilize springs.
* Compare energy usage between bimaterial and SMA
* See if solar panels can provide enough power for constant activation of SMA hinge
* Have report draft ready by next week and give to Chad for feedback
* Check with Dan about report deadline and ways of handing it in – Chad did this at the start
* Is it due on Monday, Thanksgiving or Tuesday.
* If on Monday, hand in electronically, Tuesday, hard copy
* Find out time limit for presentation

- is the presentation 15 mins? With/without question period?

* Jeremy - Meet with Greg to get samples from him
* Greg gave ideas of what bimaterials to use: Mylar, pe
* Bimaterial might not work due to low force produced
* Suggested steel mesh and plastic, so that the plastic can bond with the steel.

Recap of last week’s action items:

Group progress summaries

Bi-materials

* Bought a thermometer at home depot and took out the biomaterial

Shape memory materials

TED:

* Looked at shape memory polymer: has actuating strength of 100x less than alloys [cited Wikipedia]
* A lot of research, but not much production. SMP is cheaper than SMA
* Question: Can we build using SMP today or do we have to wait 10 years?
* Ideally want to just use sunlight, but if the temperatures aren’t high enough, will use 2 actuators

KUSH:

* Looked at weight calculations – Constrain size to 6 inches
* Calculations should give us an order of magnitude. CHAD: ”pick some materials and get some numbers”
* Blurb: Background information on SMAs. CHAD: ”watch the page limits, don’t go into too much detail of the microstructures, the focus is on the stress/strain, the force the SMA can exert, the thermal properties.”

Lifecycle analysis

* Met with chad to do the room temperature calculations
* Make a mock up of the room.

Frame:

* Do we want a continuous frame or have hinges or a hinge-like design
* Failure: Do we want it to fail at the hinges? How easily can it be repaired?
* Frame selection in the Midterm Report: Under the section Select and Assess Design

CHAD:

* Surface area to volume ratio: higher ratio = faster room temperature rise
* Take the worst case scenario, don’t have to make very detailed calculations
* Frame material is least of worries, choose a reasonable material and go from there
* Midterm Report: “we’re selecting frame material based on \_\_\_\_\_\_, \_\_\_\_\_\_, and \_\_\_\_.”
* Mention that we’re doing an assessment based on energy footprint.

Midterm report and presentation

CHAD:

* Swap each others blurbs in order to edit and make the report formatted as if one person wrote it, instead of 6 people
* Presentation should follow the report flow
* Provide constraints in a table
* Needs should be in paragraph form
* Is there a demand for this product
* Needs and constraints are high level:
* Problem specifications: What are the problems that we are dealing with? Outline the problems/questions that we are working on
* Presentation slides should have 1 idea per slide, 1 minute/slide.
* Make slides NOT text heavy, use PICTURES
* Use the hook line.

Dan response for Midterm Presentation:

* Due date is on Monday, but can be accepted on Tuesday depending on Chad
* Presentation is 15 minutes, dress appropriately

Goals for next week

ACTION ITEMS:

SEND INDIVIDUAL BLURBS TO CHAD SO THAT HE CAN PROOF READ AND GIVE FEEDBACK

Presentation: Have a run through with Chad by Thursday, ideally Wednesday during MTRL 466 time

Midterm Report: establish sections and get the format done.