

LAFAYETTE COLLEGE

Electric Formula SAE 2019-2020

Easton, Pennsylvania 18042-1775

FSAE Electric Formula Car Agenda – 3:10, AEC 429, September 30, 2019

Call to order

Jordyn & Cat

Scribe for the day

Leah

Project Status

SCADA

- New version not released, need to be able to cross-compile
- Ran out of space, need new flash drive (right now 16GB USB)
- This version is one week late, it affects TSI but is not currently delaying them in any way. GLV is still working on their board, so it is not delaying them either
- Finished gathering data for the motor

TSV

- Determined preliminary requirements of PacMan and SegMan
- Jon working on the design of SegMan, hopefully have this done by the end of the week
- Connor working on CellMan - trying to have layout done by the end of the week
- Simone is working on the display, hoping to get it done by the end of the week -- Nadovich suggests to create a prototype any way we can to get feedback (this includes the dash display as well)

- Tim needs to make some changes to the 3D model -- then he'll work on the detailed drawings (submitted by 10/7) and spinning them
- Jon suggests a design review this week for the enclosure (inside and outside)

TSI

- A lot of overdue items
- Trouble with the firmware, still analyzing it because the code was not commented from last year
- TSI board design is still in the works, they got a lot of good suggestions, but they'll have the design done by the end of this week

GLV

- Still analyzing BoB
- Noah is working on design, needs to review with Nadovich
- Know which parts, will combine order with TSI
- Need to solder board once parts come in
- SOMEBODY HELP NOAH - he'll be good once the Controls Exam is over
- Need to take measurements in the dyno room, the door is always locked?? -- talk to Yu about that
- Working on testing procedures as well

INTERCONNECT

- Maureen needs to figure out the cooling system, wants to do that before putting out another diagram
- Nadovich recommends to put a date on when we should start making cables (it should be soon!)

CHASSIS

- Have the supports designed
- Battery flats are designed
- Need to move the steering forward by 1"/1.5" this week
- They want to get safety certified by Rob this week
- They need to talk to Jack and Tim about the battery mounts

DRIVETRAIN

- Submitted differential adaptors designed, but got feedback and needed to remake them, that should be done soon
- Now looking at water-tight cabling that also provides strain relief
- Michael is worried about spacing for cables to be routed from the motor, wants to check out the dyno room
- Gear-ratio calculations still need to be done -- they need to talk to Helm about this
- Maybe using two different ratios for different parts of the competition
- New cooling system should be here by late October -- Jordyn would like this done earlier

SUSPENSION

- Most of front a-arm stuff done this week
- Just got plates this morning from Rob
- Looking for a new vendor for the tubing
- They should start assembling stuff, hopefully, by next week
- Changes need to be made to the steering system (as chassis mentioned)
- Carl needs to make some changes to the push rod assemblies
- He's going to start working on the rear suspension -- Cat wants to meet with them before they start to organize their time

PEDALS

- Dan's working on brake pedal this week
- He needs to figure out the balance bar which wasn't done last year

To Do's

Rework Management CDR

- Needs to be done again

MechE CDR/PDR due 10/2

- The mid-semester progress report is coming up (MechE report, not for competition)
- Needs to be submitted by the 11th

Motor Characterization

- Motor characteristic graphs are done
- They changed the target torque control as well as the resistance to run multiple sweeps (at 95V)
- Highest region for current drawn is around 200 amps
- Low efficiencies in low RPM and higher torques
- There seems to be a resonance at 2400 RPM, they think this is a dyno room effect
- There might be a different resonance when it gets put on the car
- They're still working on putting the results in a report and then on the website, this will be done by the end of the week
- Foot pedal would be controlling the target torque that they used for simulation, RPM will be determined by the laws of physics
- The dyno room limit was 3000 RPM but the motor is rated for 6000
- Need to now make graphs for 85V and 75V -- in these, the current went up, but really nothing else changed

Safety Quiz

- Quizzes have been graded -- everyone did well
- A lot of people got the same question wrong (what are strategies to mitigate the hazard of electric shock?)
- ANSWER:
 - Wear protective equipment
 - Turn off power while working (DE-ENERGIZE)
 - Measure voltage/check lights to make sure it's off
 - Lockout/tagout
- They will ask about our lockout/tagout procedure at competition!!!!
- We can practice the procedure, we have locks and keys

Inventory (Phil)

- Sundays and Tuesdays, Phil will cross check the purchase requests with our inventory

- He'll then notify the person trying to order if we have a similar part
- Please respond to him whether the part he finds will work
- Connor/Jon have already done this successfully

Other notes:

- Helm asks that we do not use stainless steel hardware, this is only for ME 210, and will not work well on our car