**ME492 Team Meeting PSAS: Electric Feed System Date: 2/16/2017**

**Team Members:**

* John Froehlich
* James Luce
* Rawand Rasheed
* Jorden Roland
* Michelle Shang
* John Talik

**Agenda:**

* Updates/Report backs:
  + Pump sizing - 15 min (John and Jorden) - Most basic requirements are done, planning a joint run through - next week
    - Next steps: bench mark progress, rework code to test with water, decide on first impeller design (Talik builds solid model design), 3-d print barske impellers for visualization
    - We can 3-d print them in metal for free!
  + Motor Power Requirements - 5 minutes (Mimi)
  + Ordering Motor and ESC - 5 minutes (Jorden)
    - Discuss with Andrew today
  + RC Investigation - 10 minutes (James and Jorden) - batteries need more investigation
  + Next topics to tackle (Seals, Bearings, Force Balancing) - 15 minutes (James and Rawand
* Create/delegate this week’s task list - 10 minutes
  + Reframe meeting for next week to include Q&A with Raul - John and Jordan
  + List of components to order (Motor, ESC, everything we need right now to make the motor work) All today with Andrew
  + Make a solid model from preliminary numbers - Talik and Jordan
  + Select a material (Must be cheap and been used before) - should focus on bearings and seals - Rawand
  + First pass shaft dynamics. (Rotating disk) - Added to pump sizing documents, check for critical speeds - James and Talik
  + Preliminary designs for test apparatus - Mimi and Talik
    - Begin brainstorming for ME411 project - Rawand
    - Research impeller testing, check out Ranchov paper
  + Investigate batteries - Work with Andrew today
  + Sick beats - Talik **(https://www.youtube.com/watch?v=wv0iUKb80C8)**
  + AIAA abstract submission deadline 2/23 @ 2000 Hr**s Eastern time** - Maybe we can adapt one of our proposals? Monday work day, each of us needs to make an account with AIAA
    - [Link to call for papers](http://www.aiaa-space.org/callforpapers/?utm_source=Informz&utm_medium=Email&utm_content=CFPFinal&utm_campaign=Space2017)
* Lunch Break
* 1:15-2 workshop TBD
  + Video call with Andrew to discuss order of motor and related components ~1300 Hrs
    - [Video call](http://psas.pdx.edu/hangout)
    - ESC[[esc](https://hobbyking.com/en_us/turnigy-aquastar-240a-water-cooled-esc.html)]
    - Motor [[motor](https://hobbyking.com/en_us/turnigy-aquastar-t20-3t-730kv-1280kv-water-cooled-brushless-motor.html)]
    - Batteries
    - ~~Water cooling system [closed loop~~ [~~example~~](https://www.newegg.com/Product/Product.aspx?item=N82E16835181035)~~]~~
    - Materials

**Notes from andrew meeting:**

* Power requirements
  + 3.5 kW on the LOX
  + 4.2 kW on the IPA
  + Safety factory would suggest that we want a 5kW "continuous" for 1 minute which is about 6.7 HP
* Speed requirements
  + (,30k - 40k, 50k) RPM (833 Hz)
* Which means a torque of ~2 kNm
* Electrical power
  + Choose a 12S pack which is (36,43,50) V
  + Which means currents of (100,115,138) A
  + Whoah.
* Motor
  + 229 A @ 1280kv @ "Δ" config: RPM per volt so @ 43V = 55,040 RPM
  + 128A @ "Y" 730kv: RPM per volt so @ 43V = 31,390 RPM
  + Max watts: 5280w
  + Maximum RPM: None. "Max" voltage of 41V @ 1280 kv = 52480 RPM
    - Oh wait no: [30k RPM](https://hobbyking.com/media/file/921563851X4952X34.JPG)
* Controller
  + 12S for sure.
  + Should handle 229A, so 240A OK
* Battery
  + Getting a 12s with a charger to charge in series.
  + Having charger that can balance a 12s
  + Andrew likes [this one](https://hobbyking.com/en_us/turnigy-graphene-12000mah-6s-15c-w-5-5mm-bullet-connector.html)
* Battery Charger
  + Make sure the ones in the rocket room (under the red toolcase?) will work
* SHOPPINGZ LIST:
  + More 8 mm connectors for all the things (maybe like 8 sets)
  + Wire
  + ESC programmer
  + Speed controller (something cheap and manual we can just use)
    - Wireless? Transceiver?