

2/04/16

Byte-Back Team Agenda / Minutes

Attendees: Chad, Kayden, Hatem, Majed, Dr. Li, Dr. Johnson, Stephanie McDaid

Action Items For Review:

AI:21 Chad

Build a unit for synchronizing the power system in the advanced power lab to the Avista system. This action item is going to change to configuring a SEL-351 so that it can be used to synchronize the system. I plan to get a copy of the 351 documentation at work. (10/16)
Due 3/15 **This AI is low priority. Will work on other tasks for the time being.**

AI:38 Chad Vorse

Re-write the specification and project description. Have Dr. Fischer review it in person. **Has been written, awaiting review from Dr. Fischer.**

AI:39 Kayden

Conduct a pseudo WEBEX meeting to make sure it is working. **Software is not installed globally (for all accounts) on the desktop. Tried using Kayden's old laptop as an alternative but its wireless internet card no longer works. Will look into what can be done to accommodate. Also, Majed pointed out that the back of the projector has an HDMI port input. CHAD's Laptop has HDMI output. As long as Chad's laptop has the Cisco software, WebEx fiasco is solved (assuming someone has an HDMI cord they can bring). I do have the software on my laptop and I can bring a long HDMI chord.**

AI:40 Majed

Two graduate students offered to help with RTDS, but said it would take two months. They are going to have to start working on RTDS tutorials. Run a simulation from a prior year senior design team. **Went through tutorial, have new questions to ask Dr. Johnson. Dr. Johnson mentioned that he may have a few more contacts for Hatem and Majed to get in touch with.**

AI:41 Hatem

Talk to Alaap about RTDS. **In progress.**

AI:42 Chad

Use SPI to read encoder. Isolate encoder and microprocessor voltages. Provide position and radial frequency to the PID algorithm. **In progress. I haven't made progress on this as I am dealing with a mini-back crisis. Doc shot me with steroids and muscle relaxers (super strong ones, apparently) today, so hopefully I can get back to normal soon.**

AI:43 Kayden

Edit existing driver to be MODBUS compliant. (Google a modbus driver for the pic). Complete an initial communication with the VFD. **In progress**

Lab Time Goals

Review goals for lab on Sunday Evening:

Chad

- Procure and test MOSFET devices for voltage isolation between encoder and microprocessor
- Develop SPI driver to read the encoder and report the absolute shaft position.
- Calculate shaft RPM based upon encoder readings.
- Get with Kayden and start designing the PID driver.

Majed

- Complete the RSCAD tutorials
- Work towards developing our finalized models.

Hatem

- Get draft reviewed by Dr. Johnson (couldn't remember what the draft was)
- Talk to Alaap about RSCAD.

Kayden

- Put on paper the connections to the VFD and the board. Create a list of registers that would be nice to see written to. (Change reference or increase/decrease speed).
- Complete the MODBUS driver (possibly find one on the internet and just modify for our purposes)
- Test the driver by writing the simplest of commands to the VFD, i.e., start and stop

Goals for completion prior to Detailed Design Review

I (Chad) took some license when writing these. They are entirely up for discussion and buy in from the whole team. If someone feels that they are too ambitious, we can remove things.

- I. Functional MODBUS
 - A. Write to fieldbus controller
 - B. Start and stop the system
- II. Read Encoder
 - A. Publish absolute encoder position
 - B. Publish shaft RPM in rad/sec
- III. Complete RSCAD tutorials
 - A. Run models from prior design team
 - B. Research book provided by Dr. Johnson to identify our model
- IV. Connect load to system
 - A. Switch in and out different loads
 - B. Collect data and publish on system response

Team discussed these as goals. No objections have been made. Will pursue these until decided otherwise.

New AI's

AI:44 All (food for thought)

Team discussed date for detailed design review. Sounds like we will shoot for a date near mid-to-late February. Keep this in mind as inspiration to finish work by then in order to have impressive and robust presentations.

AI: 45 All (food for thought)

Dr. Johnson also mentioned that the detailed design review does not have to be powerpoint-style. One idea is to have working, actual, physical demos of the work we have done and conduct our review in the power lab. The lab has a screen too, so if we do need to have something displayed we can bring a projector and computer to do so. **Kayden is a big fan of this idea. Visual demo presentations are much more appealing than sitting through powerpoint presentations.**

AI:45 All (food for thought)

EXPO Paragraph Will be discussed during general session Tuesday 2/2/16. This is the paragraph that will be published in pamphlets and EXPO advertisements around campus. Everybody should attend general session.

Hatem has a model, the IEEE governor model. The model uses plate parameters. Dr. Johnson recommends using a voltage and resistor as the load. He has further learning to do before he knows if he uses a block diagram or makes his own. Dr. Johnson also provided a simple transfer function for them to use as well.

Hatem and Majed will go down to the lab and determine the SEL unit used to monitor frequency and voltage.

Dr. Johnson clarified that the governor model will be added to the exciter model so that the entire system has a model. You need an ideal source behind an impedance, which is easier than putting into another generator.

Rotor position: who needs it and what do they need? Andy will be using delta rotor angle, if he needs rotor angle with reference to a zero point he will contact us.