

Client Question Transcript (Kevin Damron/Norman Fischer)

What is the timeline for goals? When are certain items/events due?

- By end of school year, build and model test reactor, as well as RTDS.

How often would you (the client) like updates?

- No updates necessary if no problems, within 24 hours if there is a problem. Talk to Asad first

Are there any relevant research documents?

- I (the client) recommend doing all research yourselves, and contacting your grad student (Asad) if necessary

What equipment can you provide? That the U of I has? That need to be purchased?

- Purchased: turns and coils/wire for model
- U of I: Model power lab to detect systems
- Build: physical carrier for system.

What does the finished product look/function like? (May also translate to future projects -AH)

- Physical 3-phase reactor model for testing of faults.
- RTDS model of the same.

What is the best way to contact you (the client)?

- Asad first. If this fails, email is preferable.

Does testing need to occur in 3 phase or is single phase sufficient?

- 3-phase system. Each phase will be built slightly differently
 - Two phases will have the ability to detect turn-to-turn faults within the reactors.
 - One phase will be hand-built
 - # of turns in one phase must be variable in order to detect changes in sensitivity.

If 3 phase, delta, wye, or ability to switch configuration?

- Y-configuration preferred

What physical setup of the reactors is preferable? (A, stacked, other)

- Reactors will be stacked.

Reactors in series with line or parallel?

- Series of reactors, in parallel with line.

Do we need to break circuit when fault detection occurs or is observing behavior during fault enough?

- Observation is enough. Ideally, able to detect many faults.
- Must also compare to a similar effect of an iron core reactor in theoretical faults.

What is the scope for the Uofl team? ie test existing hardware protection, create algorithms for testing, data gathering for future development?

- Must be within Schweitzer's fault detection range (5 A nominal) to protect equipment.
- Be creative with ways to detect faults.
- Assist Asad's grad project as needed

What are the voltage and current levels needed for the system? (U of I lab has 110 V max)

- 110 V, 5 A, enough inductance to prevent faults.

What other system parameters?

Will this be on the grid anywhere? Any visits to Avista, etc.?

- Will organize a trip to an Avista site
- Model will not be on grid, but will be tested in model power lab

Preference on computer models for reactor tests? Multiple models?

- RTDS model

Modular implementation on grid?

- Unnecessary (will test in model power lab)

Smallest current detectable? Or variation from established current?

What are we detecting in terms of frequency, voltage, current, power, or other factors?

- See Above
- Must detect capacitance as well, since it is an air core reactor

Reactor size? PURCHASING

- Must have enough built-in Henrys to detect faults.