

Hall A - SoLID Magnet Control Systems – meeting minutes

Date: June 10th, 2020

Time: 10:30 – 11:30

Attendees: Aaron Brown, Peter Bonneau, Brian Eng, Pablo Campero, Steven Lassiter, Tyler Lemon, Marc McMullen, and Whit Seay

1. Relay Motor Controller board progress

- 1.1. Marc McMullen mentioned that Jack has the relays required for the board, but the quantity is unknown.
 - 1.1.1. Relay model: Omron G5V-2, dismantable, industry standard footprint
- 1.2. Marc McMullen sent quotes to manufacturers
 - 1.2.1. Price for each bare boards is ~ \$25
 - 1.2.2. Approximate cost for each board with components is \$250
- 1.3. Agreed on the acquisition of 10 bare boards and components for 5 boards
- 1.4. Components in the boards will be populated at the Lab by DSG

2. PLC programming status

- 2.1. Liquid levels have not been defined yet
 - 2.1.1. Brian Eng suggested LM-510 liquid level monitor with dual sensor, which has the option of 4-20mA and 0-10V Analog Output for each channel
- 2.2. PLC logic to readout pressure transducers on CCR completed
- 2.3. JT Valve controls
 - 2.3.1. Added LVDT readout and valve readout errors to PLC code
 - 2.3.2. Brian Eng suggested the generation of spreadsheet containing all parameters and conditions to control the JT valves
 - 2.3.2.1. Verify control logic: opening and closing conditions for each valve
 - 2.3.2.2. Verify PID controls: number of PID loops, PV and CV, and PID parameters for each JT valve
- 2.4. Heat Exchanger instrumentation controls and monitoring
 - 2.4.1. Added temperature sensors readout
 - 2.4.2. Added LVDT readout for two JT valves
 - 2.4.3. For JT valve controls, suggested same spreadsheet as point 2.3.2. to:
 - 2.4.3.1. Determine differential of temperatures to be monitored
 - 2.4.3.2. Verify controls: opening and closing conditions for each valve.
 - 2.4.3.3. Verify PID controls: number of PID loops, cascading PID requirement
 - 2.4.3.4. Verify PV and CV, PID parameters for each JT valve (LN2 and GHe Mix)
- 2.5. Found information in Oxford Operational manual with regards to checks on the axial and radial supports during cooldown, this will be considered for the PLC programming

3. HMI programming status

- 3.1. Pablo Campero completed second version of CCR HMI screen, reviewed changes made
 - 3.1.1. Added EPICS variables from cryo plant, Steven Lassiter suggested remove the space between the indicators used for pressure and flow rate.
 - 3.1.2. Confirmed location and labels for JT valves
 - 3.1.3. Added average temperature and current readout
 - 3.1.4. Added new features to open new displays to control each valve
- 3.2. Requested development of CCR *Expert* HMI screen

- 3.2.1. Screen will contain same information, indicators and controls as CCR HMI screen, but with the addition of heat exchanger controls
- 3.2.2. Pablo Campero will develop this screen
- 3.3. Modified *Axial and Radial Supports Expert* HMI screen
 - 3.3.1. Imbalance forces will be checked later
 - 3.3.2. Steven Lassiter requested the addition of feature to make the support fault indicators not visible when faults are not present
- 3.4. *JT Valve Page* HMI screen in progress
 - 3.4.1. Steve Lassiter suggested screen to be very similar to *Hall C JT Valve* screen
 - 3.4.2. Auto/manual control in the screen will be based on PLC logic
- 3.5. Added and tested print button for each HMI screen developed
 - 3.5.1. Tested functionality with FT View Client edition

4. CSS-BOY screens

- 4.1. Five CSS-BOY screens completed by Mary Ann
 - 4.1.1. Each screen looks identical to HMI screens
 - 4.1.2. Testing in progress by Mary Ann and Tyler Lemon
- 4.2. CCR screen is under development

5. Instrumentation status

- 5.1. Signal conditioner will be used to every voltage signal except for the signals read by PLC ADC module on its differential mode
- 5.2. Most probably hall probes won't be needed, PLC code to read them will be kept
- 5.3. Steven Lassiter mentioned that Cooldown procedure for SoLID magnet would be similar to Hall C magnets but will follow Oxford recommendations
 - 5.3.1. Cooldown manual has not been written yet

6. Electrical drawings status

- 6.1. Drawing A00000-16-03-0450 – changed signal conditioner's model labels
- 6.2. Drawing A00000-16-03-2350 – Wire colors in the wrong side of the vacuum feedthrough
- 6.3. Drawing A00000-16-03-0600 – Moved Mass Flow LCL to sheet # 2.
- 6.4. Remaining drawing modifications discussed during previous meeting are in progress