



Detector Support Group

We choose to do these things "not because they are easy, but because they are hard".

Weekly Report, 2022-10-12

Hall A – CLEO Magnet Mapping

Aaron Brown, Brian Eng

- Parts ordered and arrived for sensor assembly
 - ★ Initial testing found bugs with CircuitPython when trying to read the battery status so will be switching to Arduino IDE
 - ★ Confirmed that battery and magnetometer readout work individually
 - ★ Working on putting microcontroller into a sleep state to possibly save battery life

Hall A – ECal

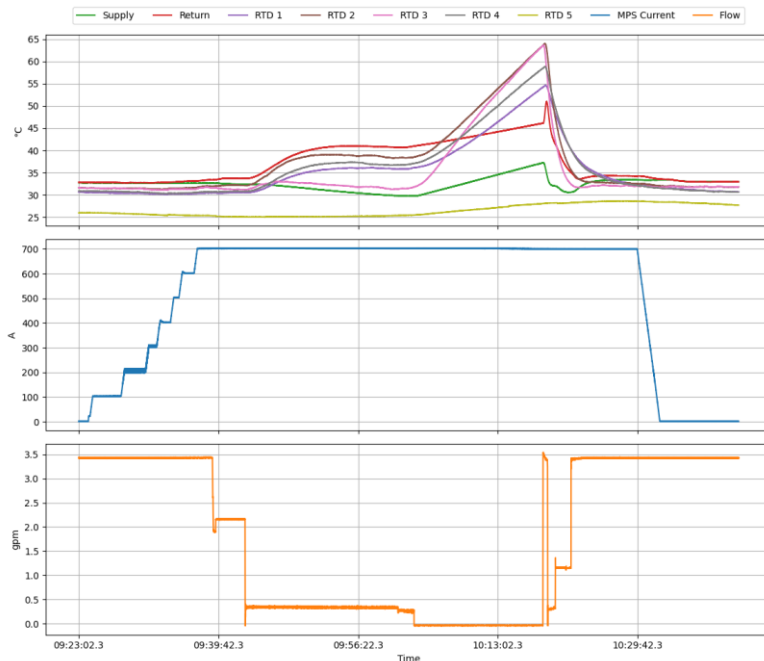
Brian Eng, Mindy Leffel, Marc McMullen

- Reviewed and revised side profile diagram of the four supermodule setup

Hall A – Moller

Aaron Brown, Brian Eng

- Continued testing with chiller acting as a heater; a second chiller was added, attempting to make the cycle time faster
- Wrote a guide on how to save PLC data using RSLogix
 - ★ O:\Magnet_Design_Tools\Magnet Projects\MOLLER - Hall A\8. Testing\Prototype Coil Tests\Moller Test Coil Datalogging.docx
- Combined multiple days of data using Python and generated plots; Excel too slow and not flexible enough with plotting options
 - ★ Also generated new plots of old data

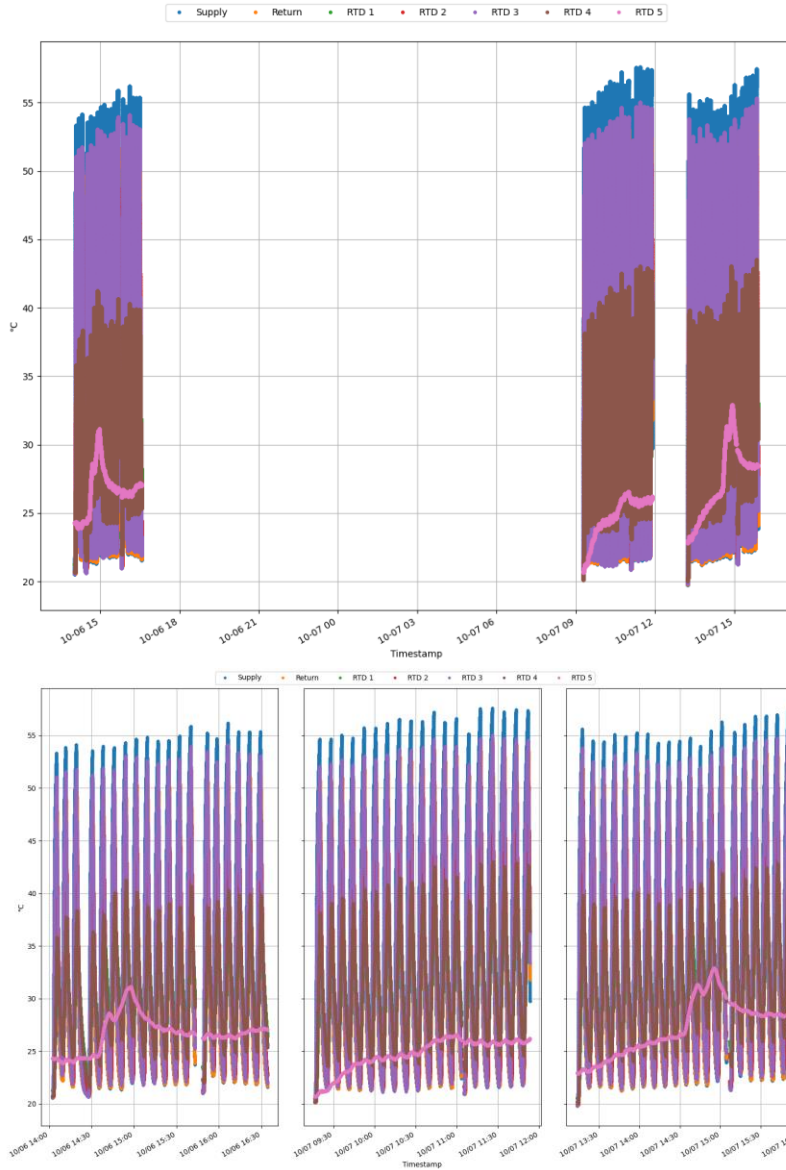




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HALLA – SoLID

Mary Ann Antonioli, Pablo Campero, Mindy Leffel

- Revised eight electrical drawings; being reviewed
- Started communication test with the power supply
 - ★ Debugging a communication issue with the power supply
- Tested *Solenoid Current Lead Valve Page* HMI screen
- Completed and tested *Solenoid Current Lead Valve Trend* HMI screen
- Added current leads mass flow controllers' flow set point variables to the data logger system
- Wrapped ~30 exposed drain wires in turret with isolating material



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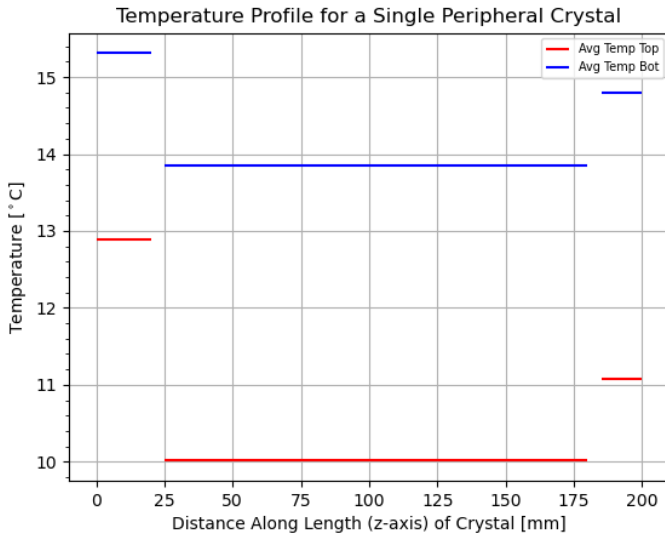
Weekly Report, 2022-10-12

Hall C – NPS

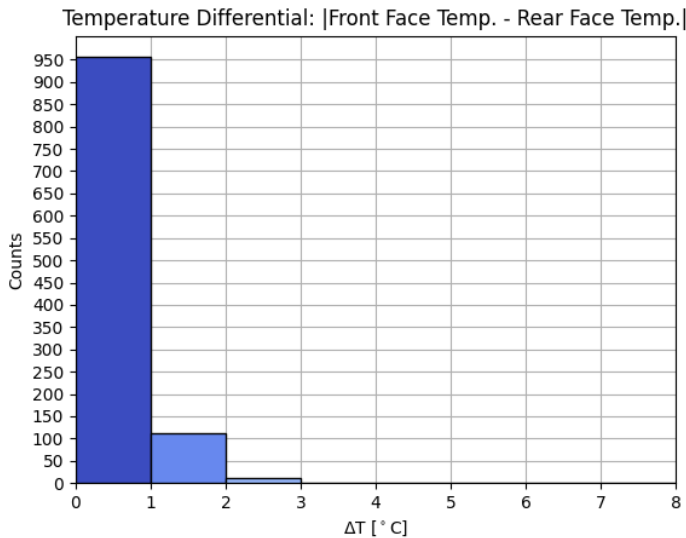
Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Brian Eng, Tyler Lemon,

Marc McMullen

- Generated additional plots of lead tungstate crystal using extracted data from Ansys steady-state thermal simulation



Average temperature for a single peripheral crystal along the top (red) and bottom (blue) of the crystal



Plot of the temperature difference between the front and rear faces of all crystals

- Debugging random loss of network interface capability of Keysight mainframe
 - ★ The LabVIEW program to test the Ohmic Instruments SC-600 relative humidity sensor was running overnight
 - ★ The next day, the program was unable to communicate with the Keysight mainframe; pinging the mainframe with its machine name was unsuccessful
 - ★ Power cycling restored the interfacing capability
 - ★ Still investigating possible causes

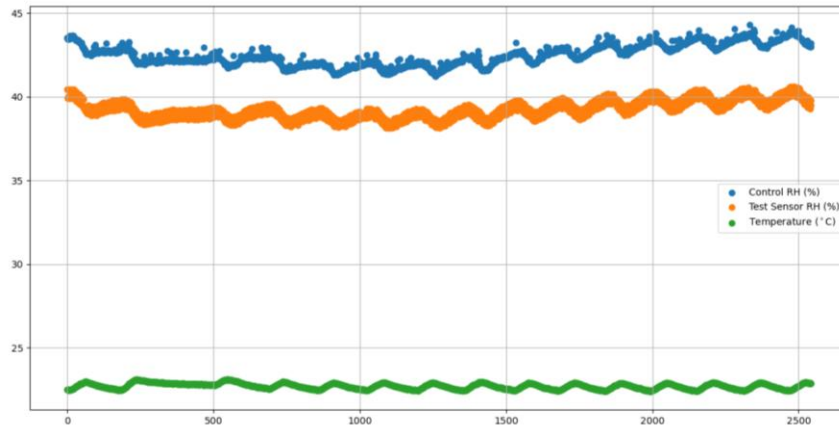


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- Continued testing Ohmic Instruments SC-600 relative humidity sensor
 - ★ The relative humidity and temperature is logged once every 10 s
 - ★ Generated a plot of over 2000 data points of both the control sensor (Honeywell HIH-4030/31 Series humidity sensor) and the test sensor



- Crystal thermal analysis
 - ★ Added enclosure to surround crystal array and cooling components of the model
 - ★ Removed duplicated mu-metal horizontal dividers in the imported model
 - ★ Renamed 1080 crystals, 37 mu-metal horizontal dividers, and 37 carbon fiber horizontal dividers

Hal D – JEF

Mindy Leffel

- Wrapped seven crystals

EIC

Pablo Campero, Brian Eng, George Jacobs, Marc McMullen

- Submitted PR for thermal test stand parts
- Pressure system components delivered
- Resubmitted DSGList with modifications to the beryllium pipe test setup using an immersion heater
- Set up a table in EEL 125 to be used for the test

EIC - DIRC

Tyler Lemon, Marc McMullen

- Tested photodiodes to investigate best method of reading out their response during tests
 - ★ Used monochromator to provide 442-nm wavelength light
 - ★ Put resistor in series with photodiode and read voltage drop across resistor
 - ★ Three tests conducted
 - 1-k Ω resistor in series, read voltage
 - 10-k Ω resistor in series, read voltage
 - No resistor in series, read current



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- ★ Test results showed that photodiode current response (calculated for voltage tests and measured for current test) was consistent across three tests
- ★ Calculated DIRC photodiode responsivity was ~30% lower than specification
 - May be due to temperature of photodiode, active area size differences between DIRC photodiode and reference photodiode
- ★ [Results compiled and posted in a talk](#)
- Visited existing laser lab in EEL to check safety interlock system setup
- Compiled parts list of equipment needed for DIRC laser safety interlocks
 - ★ New items added to list include magnetic door locks, magnetic lock release buttons, and position switch for table partitions used to enclose optical table
 - ★ Revising interlock circuit to accommodate additional equipment
- Researching possibility of and how to utilize logic gates at 24 VDC rather than at 5 VDC, which would allow laser safety interlocks to fully operate without having to include additional equipment
- Started design of the laser lab, which will be used in safety documents, using NX12
- Completed draft of the Laser Task Hazard Analysis; breaks the laser-associated tasks into steps, analyzes the hazards for each step, and provides a mitigation

DSG R&D - CS-Studio Phoebus

Peter Bonneau

- Debugging software input/output controller (SoftIOC), which worked correctly prior to rebuild of CS-Studio Phoebus development system, using EPICS base 3.14
 - ★ Process variables generated by SoftIOC are not being received by the Phoebus alarm system server
 - ★ Investigating EPICS channel access connection to Phoebus alarm server