Detector Support Group

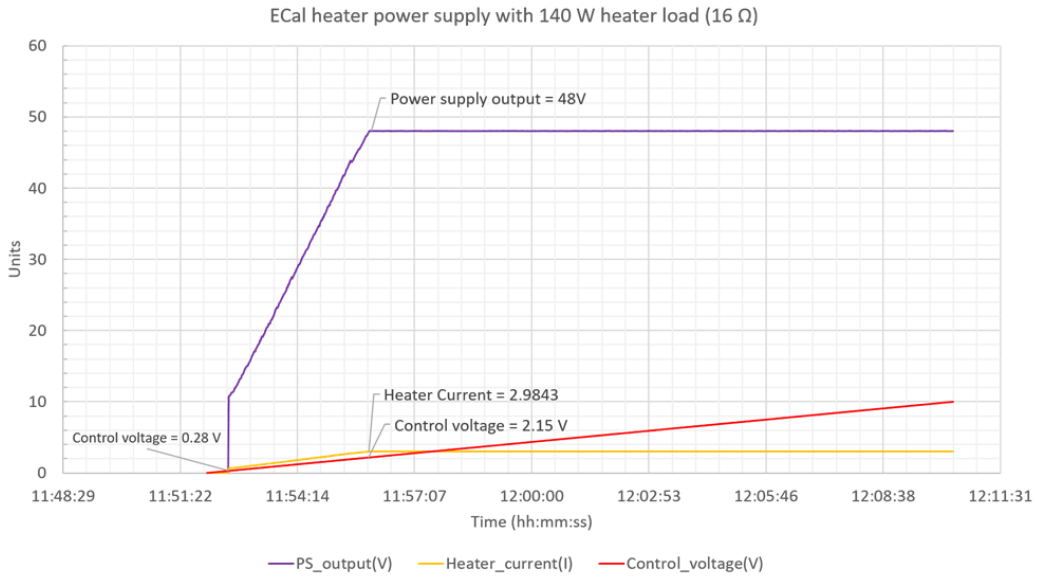
We choose to do these things "not because they are easy, but because they are hard".

Weekly Report, 2023-06-21

Hall A ECAL

Marc McMullen

- Developed LabVIEW code to ramp the heater controls power supply from 0 V to full output and record the data
  - ✶ The software confirms the functionality of the 48 V supply
  - ✶ Control voltage ramp rate set to 0.01 V/10 s
  - ✶ Software automatically sets output voltage to 0 V after the system reaches 10 V
- Tested the second and third 600-W power supplies under load (140 W heaters)
  - ✶ The power supply control range is from 0.28 V to ~2.2 V
  - ✶ At ~2.2 V, the supply output is 48 V



Hall A - GEp

Mindy Leffel

- Researched Fischer connector assembly and strip lengths

Hall A – Møller

Brian Eng

- Received a new quote for Siemens High Feature analog input module; lead time is still May 2024

Hall B – Gas System

Brian Eng

- Researching network access for field mapping units ESP32 controller communicating via I2C to a sensor (Bosch BMP390)
  - ✶ WiFi for Hall B uses username and password, while the guest network only requires a new password monthly
    - Someone or something would need to change the password monthly if use guest network
    - Possibly use a generic username with a password

Hall C – NPS

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Mindy Leffel, and Marc McMullen

- Debugged issues with the cRIO
  - ✶ Unable to remotely communicate with the cRIO after installation in the SHMS hut; new IP address assigned for the cRIO, solving issue
- Moved production softIOC and revised Phoebus screens to cdaql3 computer
  - ✶ Debugged PV issues; Phoebus uses a different format to set which IP to use if not on the same network compared to what most EPICS tools use
  - ✶ Debugged MPOD communication; IOC restart solved issue
- Completed LabVIEW code changes for array shared variables and code to activate relays based on fault conditions added; debugged
- Started developing a distribution panel for the chiller power and connection to the Keysight terminal block

Hall D – JEF

Mindy Leffel

- Wrapped seven crystals with 3M foil and Tedlar; 801 wrapped to date
- Populated 15 PMT bases; 395 of 1200 completed

EIC

Brian Eng

- If the length of the sensor is less than 7 units long it does not need an endcap
  - ✶ Reviewed possible disk layouts with 3, 6, and 12 units

EIC - DIRC

Peter Bonneau, Tyler Lemon, and Marc McMullen

- Updated the materials list for the laser interlock PCB with parts' links to the distributors and downloaded all data sheets
- Reviewing laser interlock circuit PCB design
- Developing backend of linear stage controls for Python user interface program
  - ✶ Code under development allows user to do the following
    - Set which stage corresponds to which axis of movement
    - Connect to stage
    - Read status of stages
    - Set position of stages

EIC – RICH

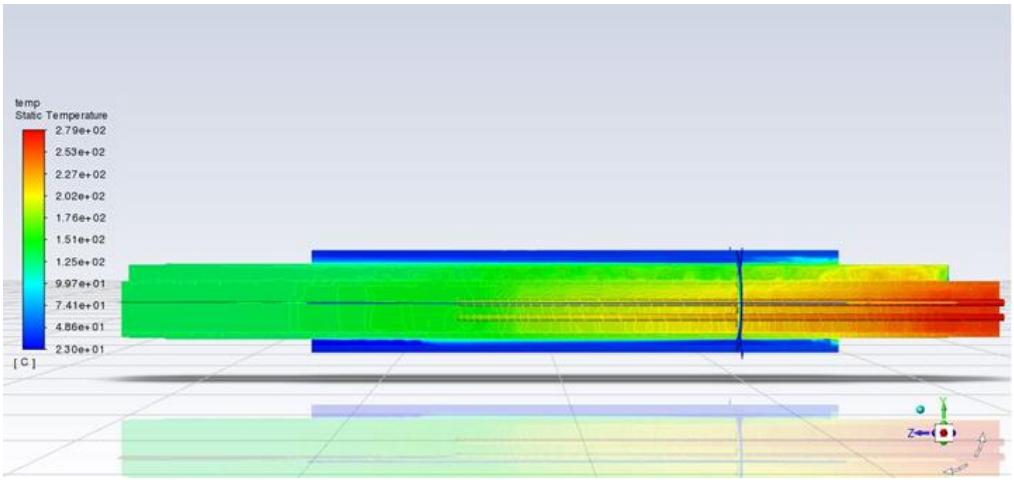
Tyler Lemon

- Compiled test results for compact CCD spectrometer capabilities of measuring wavelengths around 200 nm

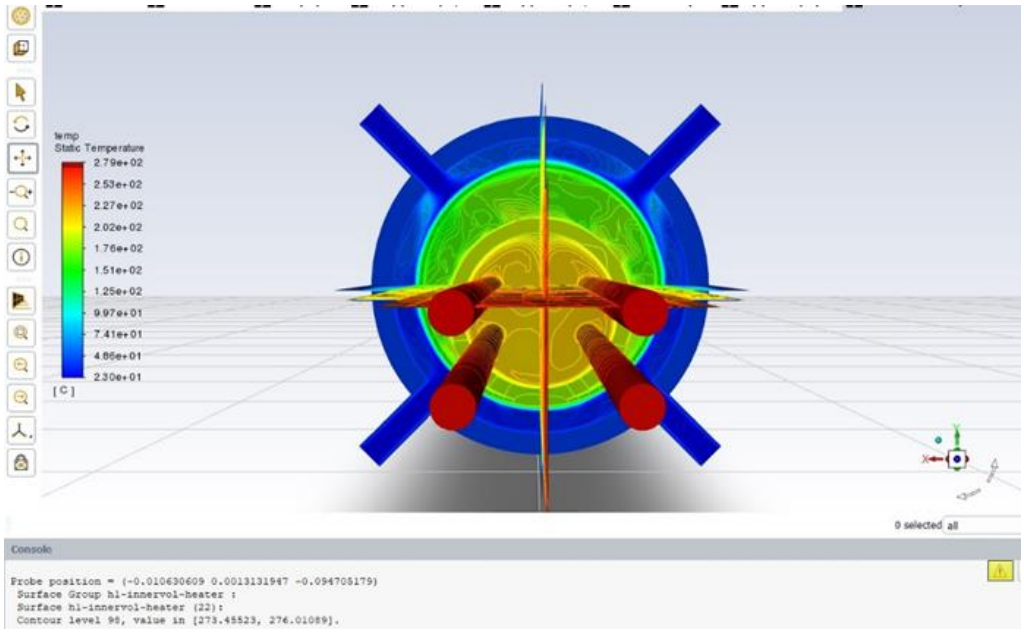
EIC - Thermal Test Stand

Pablo Campero, Brian Eng, George Jacobs, and Marc McMullen

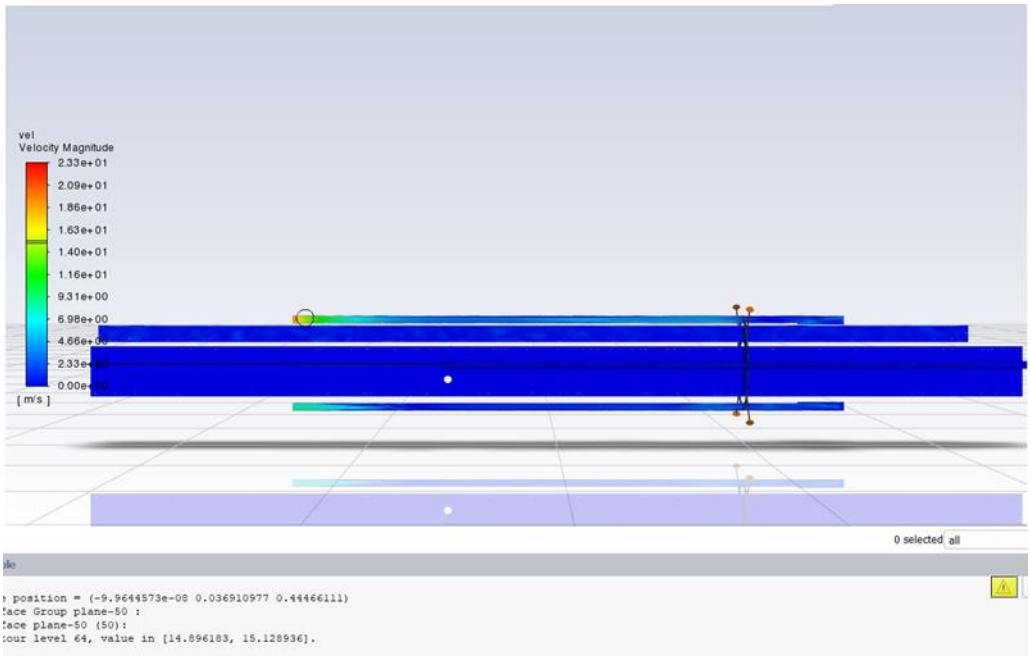
- Started heating the test stand to 190°C and noted a leak; repaired leaky fitting
- Working on test stand simulation
  - ✶ Ran simulation for Laminar model
    - Airflow mass rate for the inlets – 50 SLM and 23°C
    - Constant thermal properties for the mineral oil
    - Heat source – two heater elements at 2,959,553 W/m3



Temperature contour plot, right view; maximum temperature at the heater element is ~274°C, maximum beampipe temperature ~160°C, and maximum silicon pipe temperature ~42°C.



Temperature contour plot, back view.



Velocity contour plot, right view; airflow velocity at the annulus space outlet is ~15 m/s. For turbulent k-epsilon mode, the maximum velocity at the outlet is ~2.5 m/s.