Detector Support Group

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

Weekly Report, 2023-04-19

Hall A – ECAL

Brian Eng, Tyler Lemon, and Marc McMullen

- Continued writing controls software for six-supermodule test stand
  - ✶ Changed control channel count from four to five so the temperatures of the supermodules, which are stacked vertically, can be set as pairs, allowing the user to set the controls for each pair to compensate for convection
    - Three channels of two supermodules in parallel
    - Two channels of aluminum bar heated for the boundary
- Disassembled single supermodule test stand in EEL industrial oven
- Started installation of the controls equipment for the six-supermodule test stand in the physics storage building

Six-supermodule test stand in the physics storage building

Hall A - GEp

Mindy Leffel

- Completed two and a half high voltage boxes; eight of 22 completed

Hall A – Møller

Mary Ann Antonioli and Brian Eng

- Reviewed OCEM Power Electronics company's factory acceptance testing procedure for power supplies; lacks details of the supply's remote capabilities

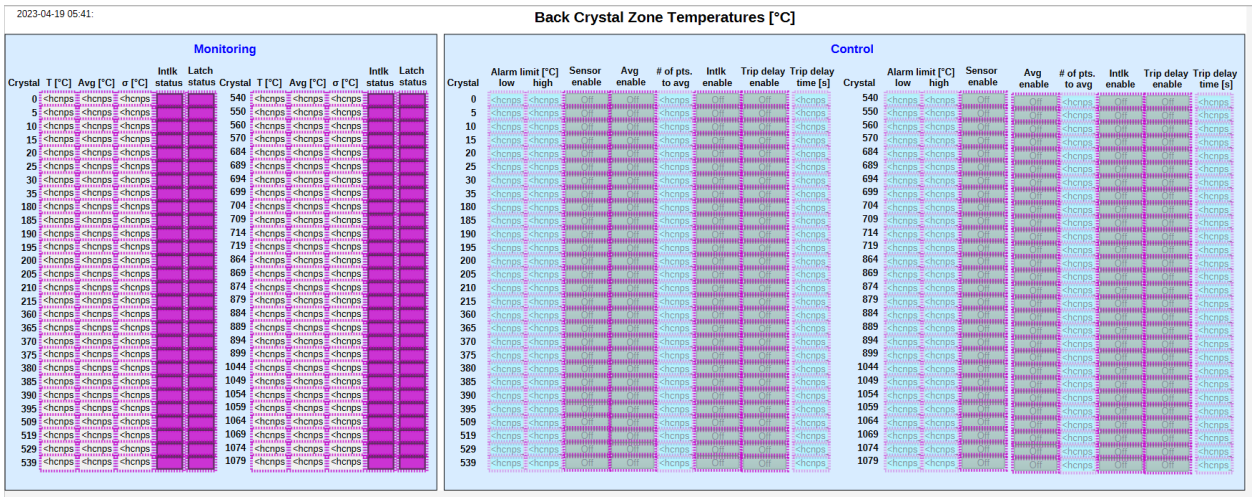
Hall B – LTCC

- Changed pressure settings for S2 while it was being moved to floor level, which required the bubbler to be moved. Troubleshot lack of return flow (pump wasn't plugged in)
  - ✶ https://logbooks.jlab.org/entry/4155091
  - ✶ https://logbooks.jlab.org/entry/4155164

Hall C – NPS

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

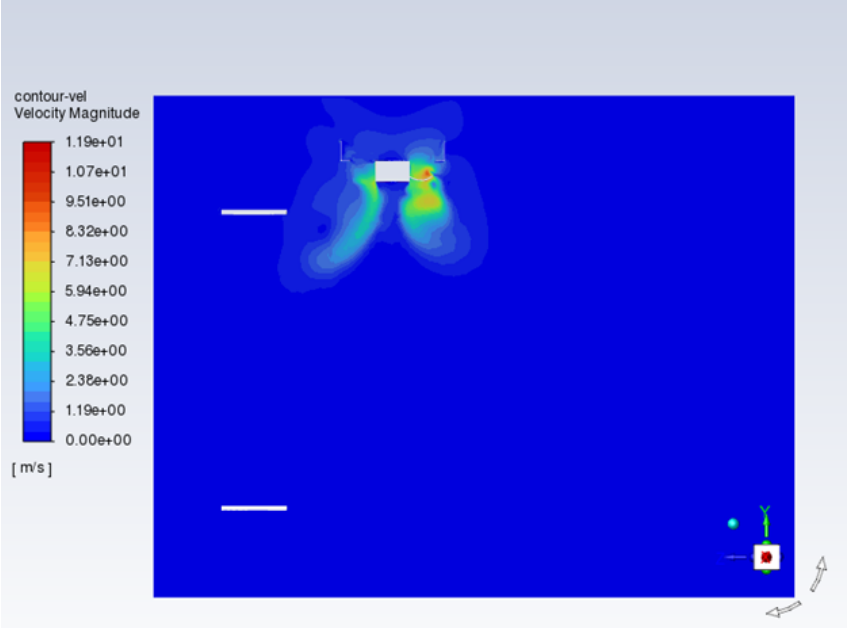
- Added all PVs to the softIOC in development; ensuring all PVs are of the correct data type for the information they will transmit
- Added monitoring to non-array Phoebus screens for chiller coolant, crystal zone cooling circuit, front crystal zone temperatures, and detector frame temperature, relative humidity, and dew point
  - ✶ Revised menu screen
  - ✶ All screens completed
  - ✶ Started testing with random numbers



Phoebus screen to monitor and control back crystal zone temperatures

- Debugging EPICS server problem in thermal readback LabVIEW program
  - ✶ Program will run, but will not create the EPICS server
  - ✶ All signals are scanned, but none get sent to EPICS
- Debugged communication issue with serial modules for chillers; communication with the chiller in DSG possession has been restored
- Began making new alarm testing Phoebus screens, without arrays, completing back crystal zone
  - ✶ Updated spreadsheet with new PVs
- Developing program to aid in Phoebus alarm system debugging
  - ✶ Program will monitor and record alarm system messaging streams, which are used to communicate between programs
  - ✶ Phoebus does not have a tool that can directly monitor the message streams
- Continued detector volume thermal analysis
  - ✶ Contacted Ansys tech support concerning detector model errors
    - Found tools in SpaceClaim equivalent to Design Modeler to combine and subtract volumes
  - ✶ Combined all 14 parts as one body and shared topology; each part can still be analyzed individually

- ✶ Implemented model in Fluent
- ✶ Ran initial simulation, rotating one of the four fans at 1000 RPMs
  - Generated temperature contour plot and velocity contour plot; compared



YZ-plane for velocity contour plot

Hall D – JEF

George Jacobs. Mindy Leffel

- Disassembled, cleaned, and inspected 15 crystals
- Wrapped seven crystals with 3M foil and Tedlar; 718 wrapped to date

EIC

Brian Eng

- Since engineering development is slow on tracking detectors, working with Chinmay Andhare on using monolithic active pixel sensors to arrive at a possible sensor layout for the B0 detector.

EIC-DIRC

Tyler Lemon and Marc McMullen

- Increased power trace widths for 24-V output circuit on laser interlock board

DSG Website

Peter Bonneau

- Investigating methods of implementing table cell hyperlinking that the JLab web development software Drupal will accept without automatic reformatting