Detector Support Group

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

Weekly Report, 2022-04-13

Summary

Hall A – ECal

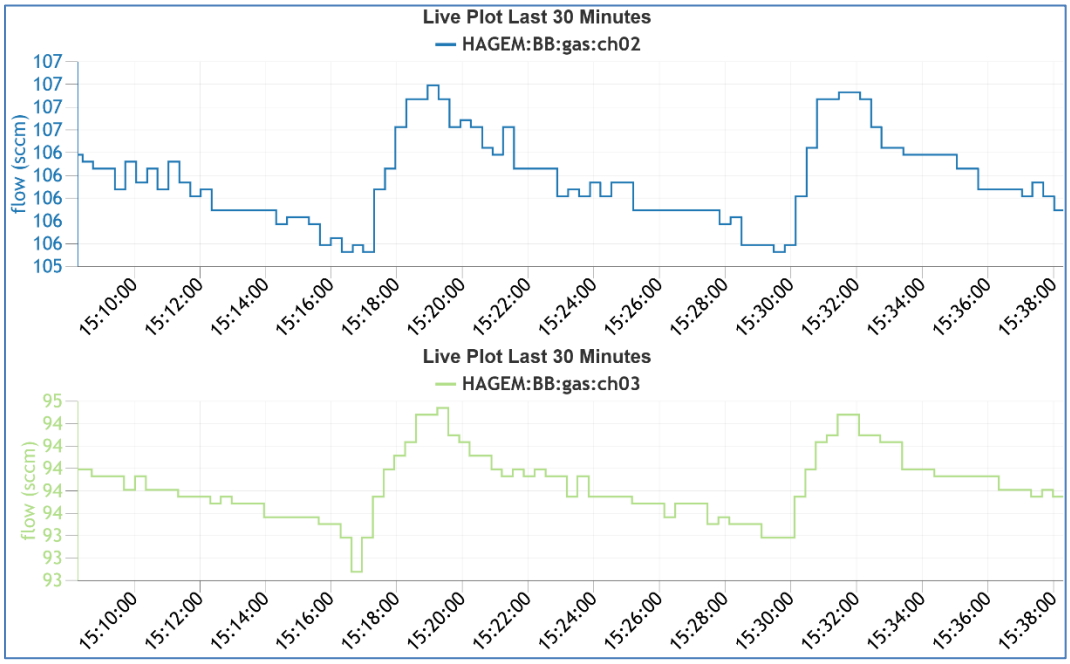
George Jacobs, Mindy Leffel, and Marc McMullen

- Assembling supermodules – 50 of 59 complete
- Machined long module threaded rods to build an SM2 frame

Hall A – GEM

Brian Eng, George Jacobs, and Marc McMullen

- Completed modifications to the gas flow and pressure monitoring system software – installed and tested the BigBite software



Plots for BigBite channels 2 and 3

Hall A – GEn-II

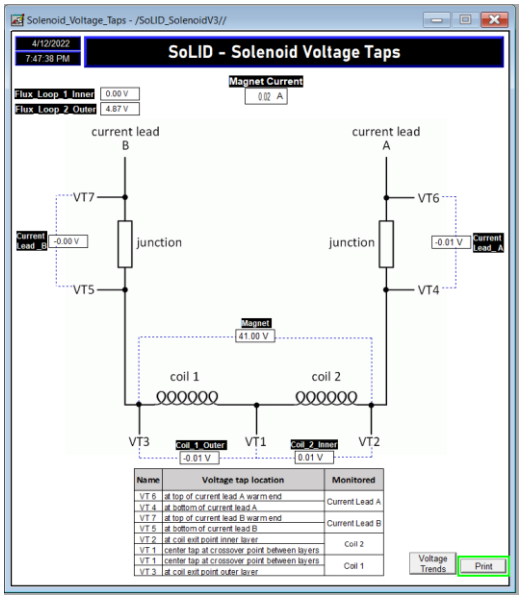
Mindy Leffel

- Fabricating RTD cables – cut and stripped five of 48 cables

Hall A – SoLID

Pablo Campero, Mindy Leffel, and Marc McMullen

- Completed *Solenoid Voltage Tap* HMI screen
  - ✶ Added pop-up trend screens for each monitored variable



SoLID Solenoid Voltage Tap HMI screen

- Debugging electric ball valve readout
  - ✶ Rewired valve transducer current circuit connections
  - ✶ Calibration of zero point position for valve in progress
- Wired 31, 100' cables to terminal blocks in Rack A
- Fabricated two, 4-conductor cables with MIL spec connectors

Hall B – Heavy Proton Search

Tyler Lemon

- Developed test version of SHT35 monitoring program on Raspberry Pi for use in Hall B HPS SVT storage freezer
  - ✶ Program reads data from an SHT35 sensor and publishes to EPICS

Hall B – RICH-II

Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon, and Marc McMullen

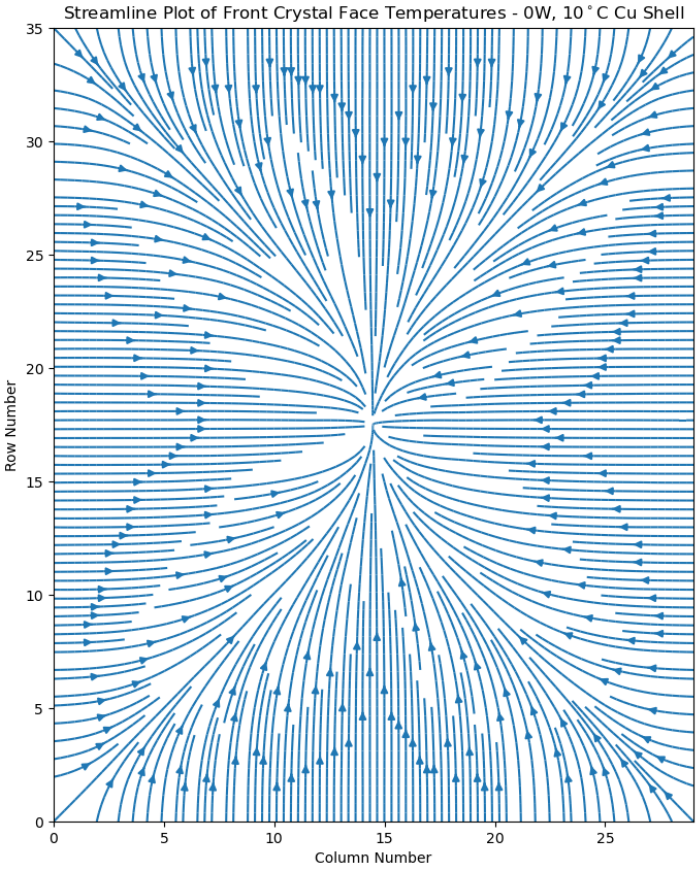
- Replaced port cover on N_2 volume RJ45 feedthrough for hardware interlock cables
  - ✶ Port cover is required for connector to latch properly into port
- Received cooling tubes after machining; modified tubes to work with 3 mm nozzles
  - ✶ Procured adapters to connect the nozzles to the cooling tubes
  - ✶ Fabricated testing fixtures for pressure system leak test

Hall C – NPS

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

- Developing hardware interlock LabVIEW program
  - ✶ Developing code for setting interlocks and trip delays
  - ✶ Added sensor enable code to add/remove Keysight channels from scan list

- Generated streamline plot of front crystal face temperatures using temperature probe data exported from Ansys steady-state thermal analysis – arrows are from low to high temperature



Streamline plot of front crystal face temperatures

- Testing cRIO-to-Keysight communication methods for hardware interlock system
  - ✶ Started set up of NI GPIB-to-RS232 converter – investigating best operating mode

Hall D – JEF

Mary Ann Antonioli, Aaron Brown, George Jacobs, and Mindy Leffel

- FCal foil pre-shaping (total of 680 foils)
- Wrapped 21 crystals with ESR foil and Tedlar

EIC

Pablo Campero, Brian Eng

- Conducting simulations in *Ansys Fluid Flow Fluent* to get the maximum temperature at the Si sensor layer 1
  - ✶ Changed air in the annulus space to aerogel

- Converted fluid domain to solid domain and applied thermal properties for aerogel (thermal conductivity: 0.0156 W/m·K)
- Modifying the model to have a separation of 2 mm and 3 mm between the outer face of the Be pipe and the inner face of the Si sensor L1

- *Fluent Meshing* having issues handling the Si layer (long thin object), e.g. using it as a capping object to create a fluid region doesn't work
  - Reached out to Ansys technical support/application engineers for assistance

DSG R&D – EPICS Alarm System

Peter Bonneau

- Developing alarm system configuration file format for process variables (PVs)
  - At startup of the alarm server, an .XML file will be imported with the alarm settings for each monitored PV
  - The configuration settings for each PV include: monitoring enable, alarm annunciate enable, guidance on how to respond to the alarm, links to user interface displays, commands (user defined scripts), and automated actions (email)
  - After importing the file, the alarm server initializes and starts monitoring the PVs
  - The Phoebus user interface can be used to edit the PV alarm settings after the alarm server has been initialized
- Developing an Input/Output Controller (IOC) using EPICS base 3.14 to be used for the development and testing of the alarm system
  - Debugging IOC initializations for input PVs; some record fields are showing as invalid (disconnected) after IOC initialization