Detector Support Group

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

Weekly Report, 2022-03-23

Summary

Hall A – ECal

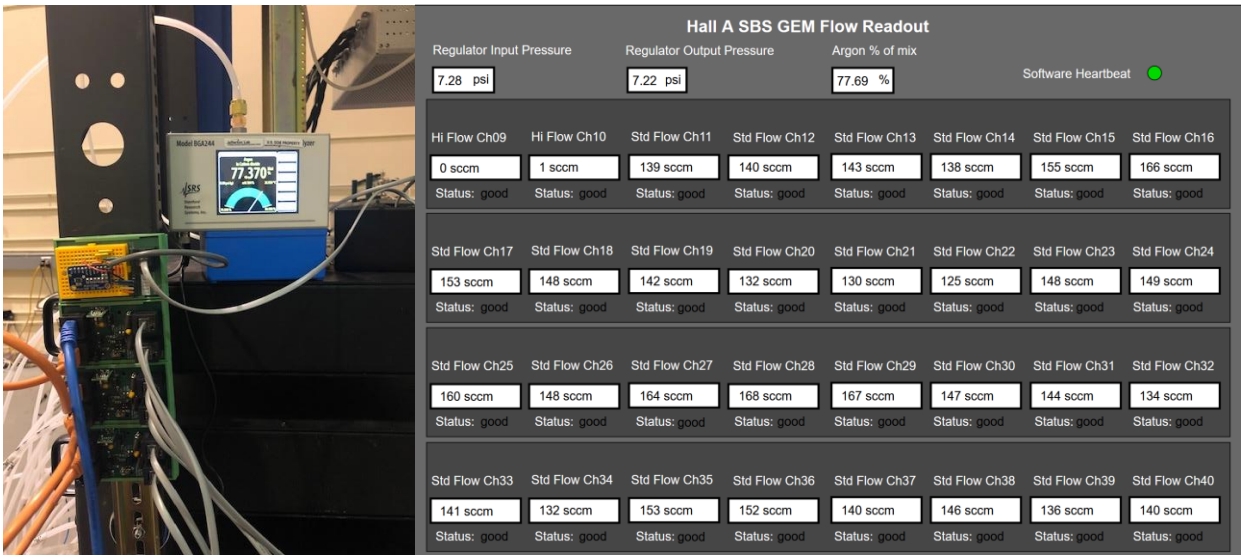
George Jacobs, Mindy Leffel, and Marc McMullen

- Assembling supermodules – 38 of 59 complete
- Measured and sorted 40 lead-glass assemblies

Hall A – GEM

Brian Eng, George Jacobs, and Marc McMullen

- Modified Python code for PID valve control – added threading module
- Modified gas flow and pressure monitoring system – added SBS mixing system Ar percent mix

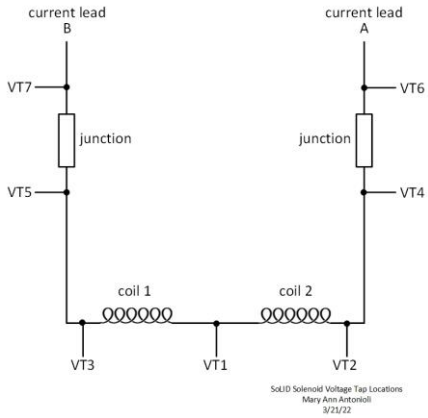


ADC module has been installed and Ar supply percentage indicator has been added to the WEDM display for SBS

Hall A – SoLID

Pablo Campero, Mindy Leffel, and Marc McMullen

- Developing *Solenoid Voltage Tap* HMI screen
- Generated solenoid voltage tap locations Visio drawing



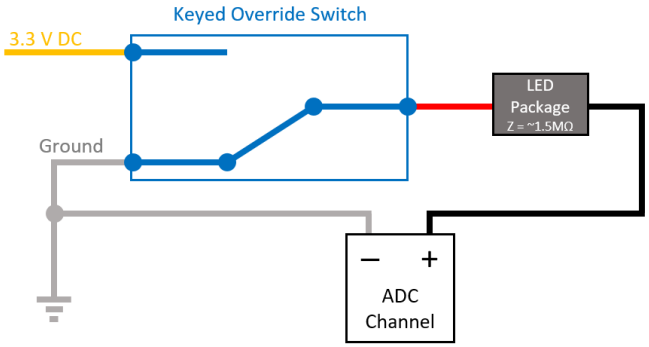
SoLID Solenoid Voltage Tap Locations Visio drawing

- Fabricating 100' long cables – 56 of 64 complete
- Fabricated 16 load sensor cables, crimped male pins and inserted into CPC connectors
- Developing NX12 model of SoLID magnet

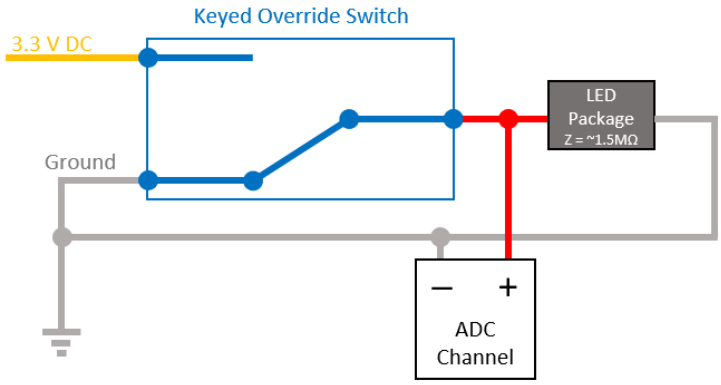
Hall B – RICH-II

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

- Designed acrylic panels with cutouts for disconnect for the hardware interlock system's electronic panel sensor patch panel
- Further investigated override switch monitoring and indication on hardware interlock chassis
  - ✶ Tested original circuit for override switch monitoring - analog input and LED indicator in series
  - ✶ Found that high impedance in LED indicator package (~1.5 MΩ) was preventing analog input channel from being pulled to ground when override switch is enabled
  - ✶ Moving analog input channel to be in parallel with LED resolved problem; override monitoring and indication now works as intended with RMC analog input monitoring



Original override switch monitoring and indication circuit that did not work as expected. In diagram, override is disabled and ADC channel floats to ~2 V.



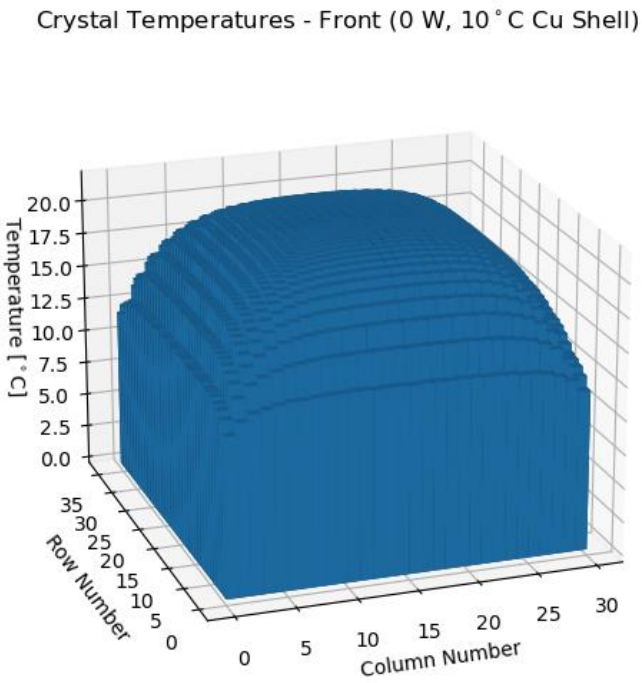
New override switch monitoring and indication circuit that works as expected. In diagram, override is disabled and ADC is pulled to ground.

- Assisted with removal of exit window from RICH-II detector shell

Hall C – NPS

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

- Developing LabVIEW hardware interlock user interface; completed *Interlock Status and Signal Monitoring* tab, started *Threshold and Enable Controls* tab
- Generated lego plot of front crystal face temperatures using temperature probe data exported from Ansys steady-state thermal analysis



Plot of front crystal face temperatures generated using Ansys temperature probe data

- Modified simplified model of electronics zone for Ansys thermal analysis
  - ✶ Added air volumes to surround electronics zone and set them as fluids using Ansys Design Modeler
- Performed steady state thermal analysis using simplified model
  - ✶ Calculated the internal heat generation in the electronic volume – 982.17 W/m^3
  - ✶ Noted higher than expected values for max. temperature; results under evaluation

Hall D – JEF

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

- Foil pre-shaping – 464 of 1600 complete
- Wrapped 26 crystals with ESR foil and Tedlar

EIC

Pablo Campero, Brian Eng

- Conducting, using Ansys Fluid Flow Fluent, thermal analysis of Be beam pipe with an air velocity of 10 m/s for the ambient and annulus space
  - ✶ Did not get expected results; investigation in progress
- Switched to implementing MPGD disc support concept first, providing information to designers
  - ✶ Initial concept started; need to revise dimensions on outer diameter trapezoids and to add readout electronics and inner discs

DSG R&D – CS-Studio Phoebus

Peter Bonneau

- Developing a site-specific Phoebus product
  - ✶ Bundles together the configuration files and application preference settings into a package for distribution on multiple computers
  - ✶ Bundles custom menu labels and user interface settings for the applications
  - ✶ Reduces complexity; much easier than compiling the entire Phoebus product from source code on every distribution computer

DSG R&D – LabVIEW/EPICS

Tyler Lemon

- Developed, and refined documentation for, Python program to generate LabVIEW shared variable library CSV file and EPICS client database file from an Excel file
  - ✶ Created example subVI for code to add to LabVIEW real-time device if EPICS server is used
  - ✶ Modified Python program to allow user to more easily specify whether an EPICS client or server will be used and the details for the device that will run the server/client