Detector Support Group

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

Weekly Report, 2022-03-16

Summary

Hall A – ECal

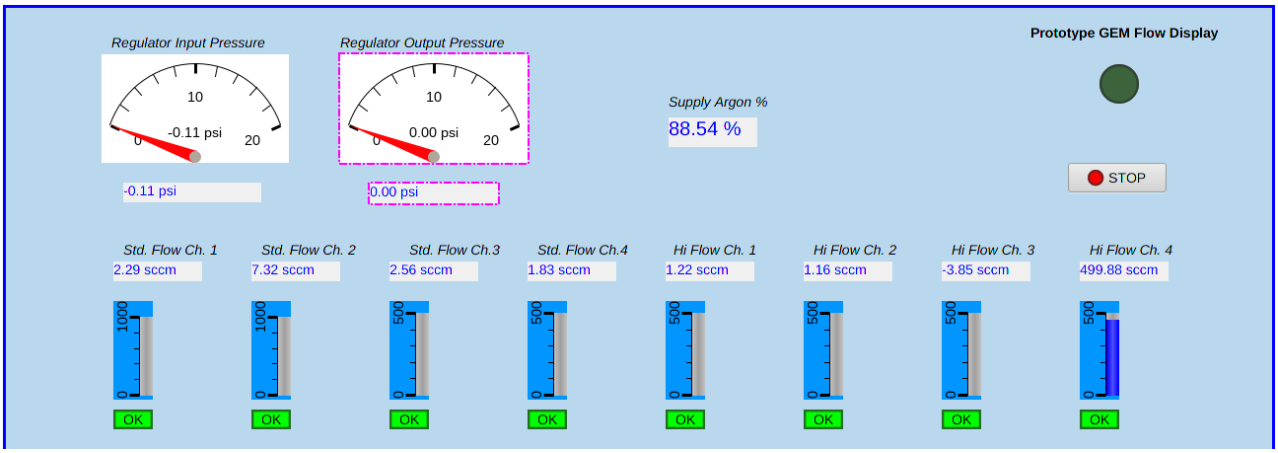
George Jacobs, Mindy Leffel, and Marc McMullen

- Assembling supermodules – 33 of 59 complete
- Measured and sorted 40 lead-glass assemblies

Hall A – GEM

Brian Eng, George Jacobs, and Marc McMullen

- Adding ADC output to GEM gas flow software
  - ✶ ADC will convert the output of a binary gas analyzer to the Ar supply percentage of the gas mix for the SBS

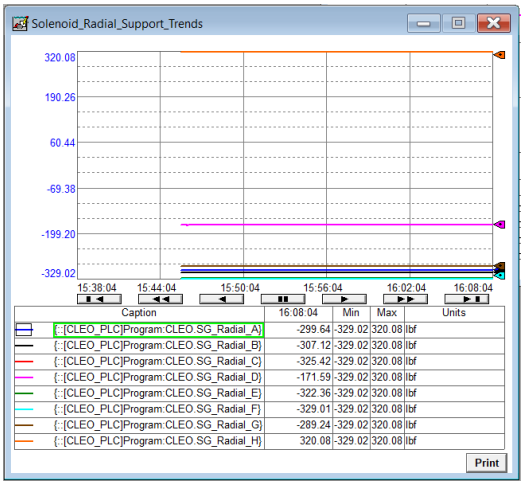


Ar supply percentage indicator which has been added to the Phoebus test display for SBS

Hall A – SoLID

Pablo Campero, Mindy Leffel, and Marc McMullen

- Developed and tested *Solenoid Axial Support Trend* and *Solenoid Radial Support Trend* HMI screens
  - ✶ The HMI screens display four axial support load and 16 (eight upstream and eight downstream) radial support load trends



Solenoid Radial Support Trends HMI screen

- Developing *Solenoid Voltage Tap* HMI screen
- Fabricating 100' long cables – 40 of 64 complete
    - ✶ Stripped jackets and removed foil from 16 cables to be hooked up to existing cables
- Identified and labeled 16 existing load sensor cables hanging from magnet

Hall B – Gas

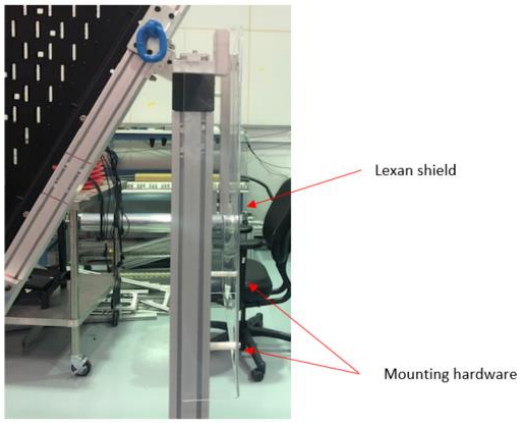
Brian Eng

- Recovered cRIO from Hall power outage
    - ✶ Most gas monitoring signals came back without any issue; gas shed network switch failed, required CC to fix

Hall B – RICH-II

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

- Debugged override switch monitoring and indication on hardware interlock chassis
    - ✶ Keyed override switch is used to bypass hardware interlock system in maintenance situations if detector is running
    - ✶ Previously, override switch was connected to RMC and was monitored by sbRIO analog input; didn't work as expected as analog input channel always floated high
    - ✶ Changed wiring in chassis to use expansion cRIO channel to monitor switch signal
- Removed stiffening tool from detector shell (needed to be removed for exit window assembly)
- Fabricated and installed electronic panel cart's Lexan shields

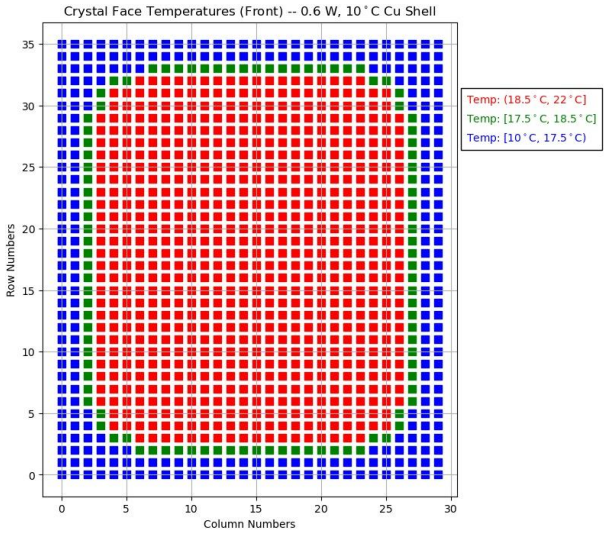


Lexan shield attached to electronic panel cart

Hall C – NPS

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

- Developing Phoebus hardware monitoring screens – adding PVs
- Developing hardware interlock user interface LabVIEW program; beginning *Interlock Status and Signal Monitoring (Crystal Zone)* tab
- Conducted, using Ansys, crystal zone thermal simulations
  - ✶ Ambient temperature: 22°C
  - ✶ Cu shell temperature: 10°C
  - ✶ Q = 0 W, 0.3 W, and 0.6 W
  - ✶ Results indicate central crystal temperatures dependent on ambient temperature



Plot of front crystal face temperatures for 0.6 W thermal simulation

- Evaluating results of Ansys thermal simulation for electronics zone
  - ✶ Noted higher than expected values for the maximum temperature
  - ✶ Debugging in progress – checking set conditions and boundaries for the model

Hall D – JEF

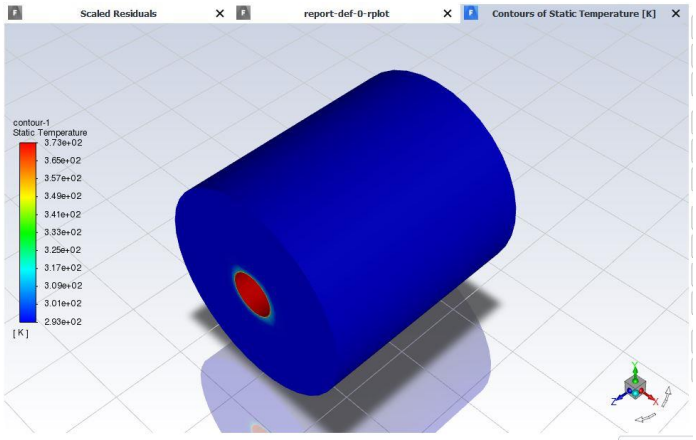
Mary Ann Antonioli, Aaron Brown, George Jacobs, and Mindy Leffel

- Cut 60 ESR foils
- Foil pre-shaping – 392 of 1600 complete
- Wrapped 33 crystals with ESR foil and Tedlar

EIC

Pablo Campero, Brian Eng

- Resolved questions regarding proper assignment of material, cell zone, and boundary conditions for beam pipe thermal analysis using Ansys Fluid Flow Fluent
- Generated report with maximum temperature for Si sensor L1
  - ✶ Preliminary result shows the temperature as 64°C – compared with result acquired in steady-state thermal analysis of 72°C



Ansys Fluid Flow Fluent results – temperature profile

- Switched to implementing MPGD disc support concept first, providing information to designers - CORE layout with ATHENA sizing

DSG R&D – EPICS Alarm System

Peter Bonneau

- Debugging the Kafka message stream for process variable (PV) configuration settings
  - ✶ Configuration settings for each PV include
    - Monitoring enable
    - Alarm annunciate enable
    - Guidance on how to respond to the alarm
    - Links to user interface displays
  - ✶ Some of the configuration settings are not being received by the alarm server
  - ✶ Developing a program to continuously monitor the Kafka message stream for PV configuration settings