Detector Support Group

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

Weekly Report, 2021-08-25

Summary

Hall A – GEM

Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen

- Installed six SBS gas flow sensor chassis in the Hall A gas distribution rack

Rear view of SBS gas distribution panel in Hall A

Hall A – HV

Brian Eng

- Developing Python script to generate grid of indicators for voltage differential (set – actual) which are colored based on alarm limits

Hall A – SoLID

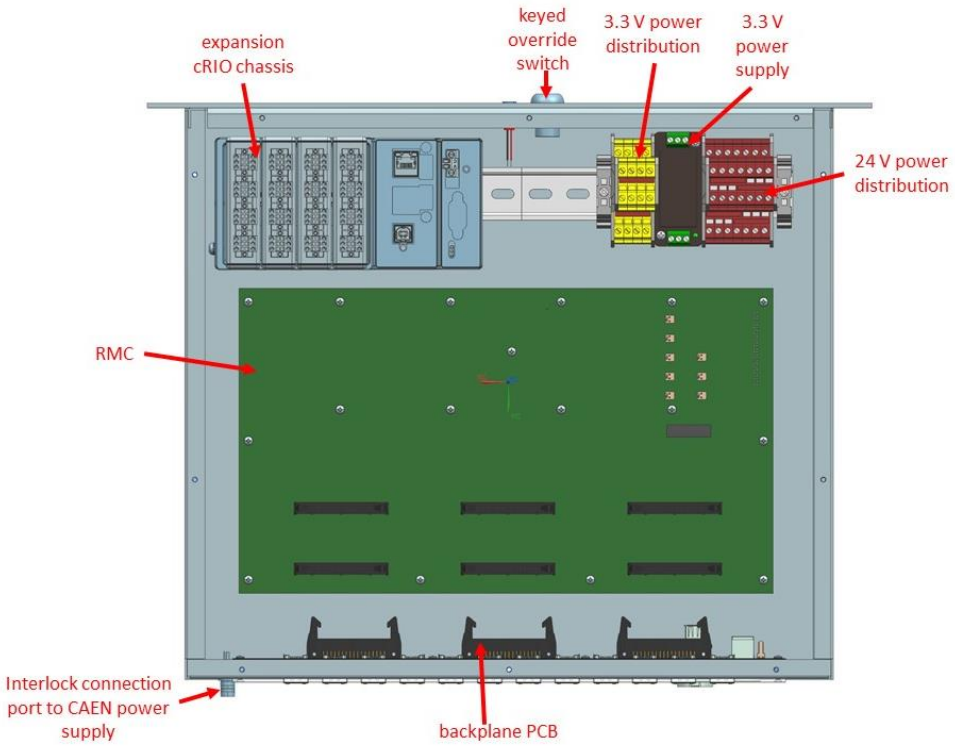
Mary Ann Antonioli, Pablo Campero, Brian Eng, Mindy Leffel, Marc McMullen

- Completed drawings
  - ✶ *Axial Load Cells Measurement Wiring Diagram*
  - ✶ *PLC IO, Remote A, Slot 8 Wiring Diagram*
  - ✶ *Axial Load Cell Cable Diagram*
- Updated *Cable List* spreadsheet
  - ✶ Added cable specifications required to connect voltage taps to quench detector units

Hall B – RICH-II

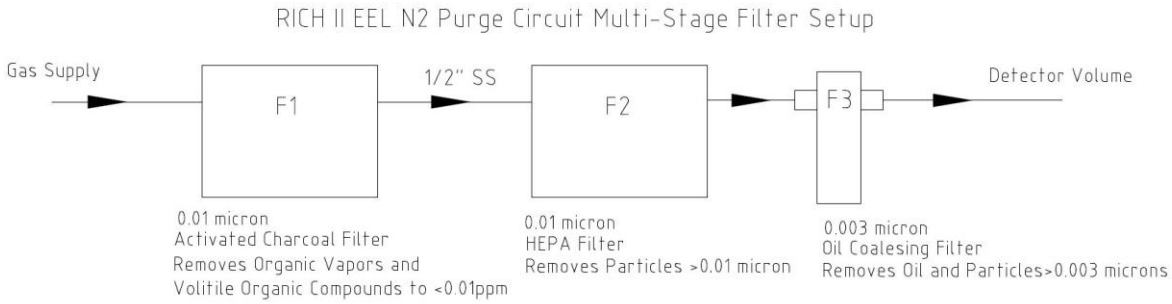
Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon, Marc McMullen

- Designed 4U tall chassis for hardware interlock system in NX12 to accommodate larger Backplane PCB
    - ✶ Backplane PCB increased to 4" tall, creating less space for feedthroughs for chassis' power, network, USB connection, and gas system



New design for Hardware Interlock Chassis with larger Backplane PCB

- Updated N_2 purge system filter diagram

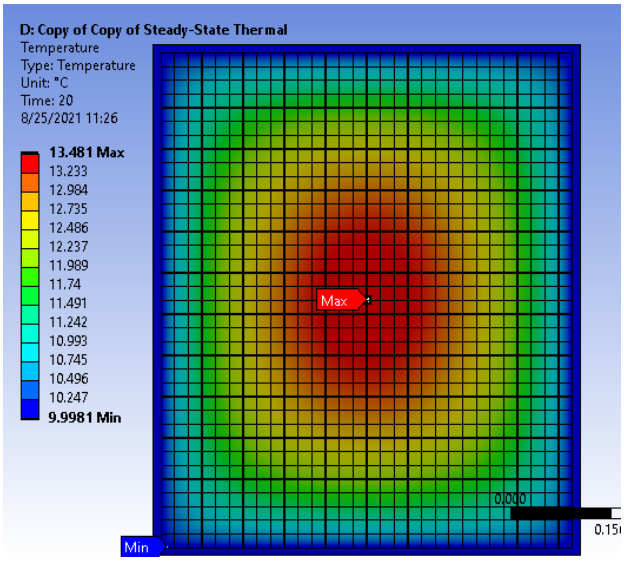


Filter diagram for RICH-II N_2 purge system

Hall C – NPS

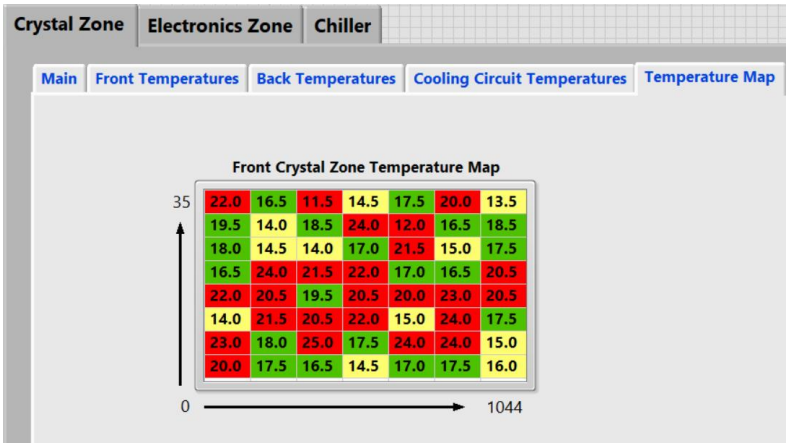
Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen

- Generated, using Ansys, 36x30 matrix of $PbWO_4$ crystals surrounded by a 1.2 cm Cu shell; still need to add carbon fiber dividers between each crystal
  - ✶ Preliminary analysis conducted using 0.5 W heat load applied to the rear face of each crystal
  - ✶ Cu shell had a constant applied temperature of 10°C



Screenshot of thermal analysis done using 36x30 grid of $PbWO_4$ crystals – maximum temperature: 13.48°C

- Developing *Temperature Map* tab for LabVIEW Hardware Interlock Monitoring program



Screenshot of *Temperature Map* tab from Hardware Interlock Monitoring LabVIEW program

EIC

Brian Eng

- Silicon tracker model now using DC-DC converter to cut down on cable service size (thinner cables)