Detector Support Group

Weekly Report, 2022-03-09

Summary

Hall A – ECal
George Jacobs, Mindy Leffel, and Marc McMullen
- Assembling supermodules – 29 of 59 complete

Hall A – GEM
Brian Eng, George Jacobs, and Marc McMullen
- Testing ADC module (ADS1115) to be used for reading the output of the gas analyzer which monitors the Ar/CO_2 supply gas ratio to the Super BigBite

Hall A – SoLID
Pablo Campero, Mindy Leffel, and Marc McMullen
- Configured *Solenoid CCS-Expert* and *Solenoid Radial & Axial Support* HMI screens so that trends for current and liquid level can be accessed by clicking their readout displays
- Developing *Solenoid Voltage Tap* HMI screen
- Generated *Solenoid Vacuum – Expert* Phoebus screen
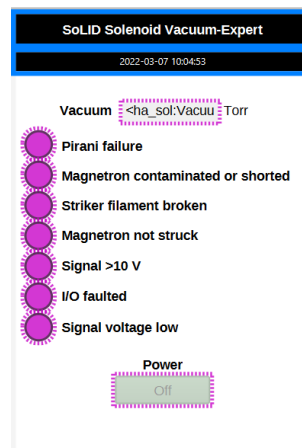
Screenshot of *SoLID Solenoid Vacuum – Expert* CSS-Phoebus screen

- Fabricating 100' long cables – 40 of 64 complete
- Terminated and tested two 41-position MS connector cables and one 16-position circular plastic connector (CPC) cable

Hall B – RICH-II
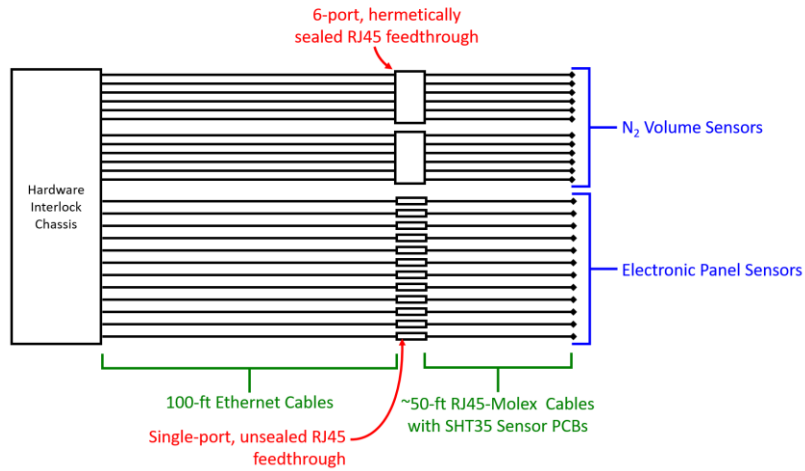*Mary Ann Antonioli, Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon, and Marc McMullen*
- Set up hardware interlock system chassis to read all 24 SHT35 sensor PCBs with ~150' of cabling
  - ✦ All sensors have a feedthrough disconnect at the 100' point for patch panel into RICH detector followed by ~50' of cable
  - ✦ System has run since March 4, 2022 with no issues
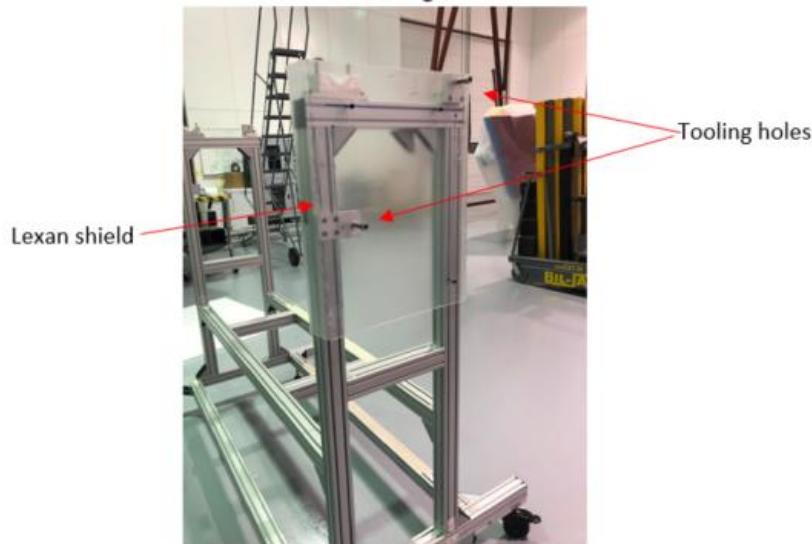
✶ Next step will be to move sensors into dry box to test operation in a low humidity environment

System diagram of hardware interlock system test setup

- Completed prototype shield for the e-panel cart's pinch points

Prototype Lexan shield designed to eliminate pinch points caused by e-panel cart rotation

Hall C – NPS

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

- Conducting Ansys thermal analysis of electronics zone
  - ✶ Using NX12, generated new simplified detector model – includes only detector enclosure (walls, top and bottom plates), PbWO$_4$ crystal blocks, heat exchangers (top and bottom), and electronics zone volume

- ✷ Manually calculated total heat flux generated by the electronics based on provided current and voltage parameters per crystal for HV and LV
  - ▪ Total heat: ~352 W
  - ▪ Total heat flux: 706.31 W/m^2
- ✷ Imported simplified model to Ansys and configured for simulation (meshed model, configured solid and fluid domains, assigned materials)
- • Developing Phoebus hardware monitoring screens – adding EPICS process variables

Hall D – JEF
Mary Ann Antonioli, Aaron Brown, George Jacobs, and Mindy Leffel
- • Cut 120 ESR foils
- • Foil pre-shaping – 250 of 1600 complete
- • Cut 60 front end reflectors
- • Wrapped 10 crystals – seven with ESR foil and three with ESR foil and Tedlar
- • Generated Visio drawing of JEF module
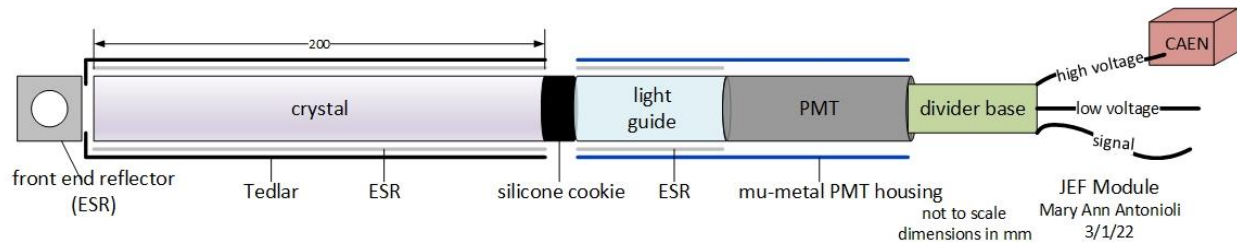
Schematic of JEF crystal module

EIC
Pablo Campero, Brian Eng
- • Provided dimensions for ECCE MPGD and CAD files for Hall A GEM + ATHENA Micromegas to Ron Lassiter in order to generate preliminary design for an MPGD support structure
- • Attended the ATHENA tracking meeting
- • EIC DPAP (Detector Proposal Advisory Panel) closeout – ECCE recommended as detector 1 (located at IP6)