



Detector Support Group

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

Weekly Report, 2021-07-21

Summary

Hall A – GEM

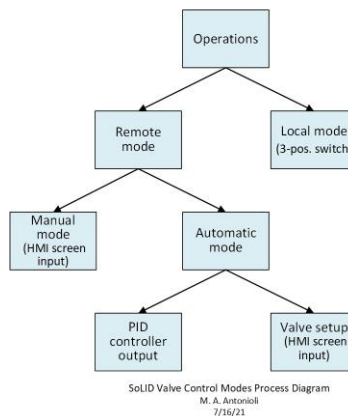
Mary Ann Antonioli, Peter Bonneau, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, Marc McMullen

- Verified the completion time for SBS detector assembly in the EEL cleanroom: mid to late August; this will determine the start time for RICH-II assembly

Hall A – SoLID

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

- Calculated power consumption for devices in Instrumentation Racks #1 and #2
 - ★ Generated spreadsheet with detailed calculations for the power required for each device for 5 VDC and 24 VDC
- Updated *Cable List* spreadsheet
 - ★ Added base specification required for cables to connect Macro Sensors Low Voltage Conditioner (LVC-2412) to local volt-meter
 - ★ Added total length required for cables of the same type and specification
- Generated, using Visio, first draft of Cryo Control Reservoir (CCR) and Heat Exchanger (HX) valves control modes process diagram



First draft of CCR and HX valves control modes process diagram

Hall B – RICH-II

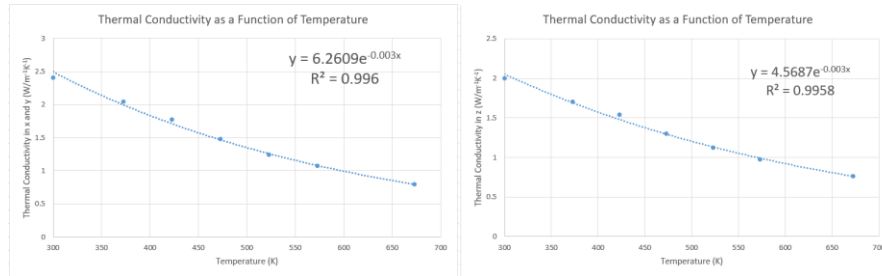
Mary Ann Antonioli, Peter Bonneau, Pablo Campero, George Jacobs, Tyler Lemon

- Conducted, using Ansys, a steady-state thermal analysis of heat dissipation on the electronic panel
- Developing air cooling P&I diagram and components list
- Developing hardware interlock system program
 - ★ Completed sbRIO FPGA code to read the SHT35 sensors
 - ★ Completed temperature and humidity monitoring and interlocks
 - ★ Coding for monitoring and interlocking gas system and air cooling

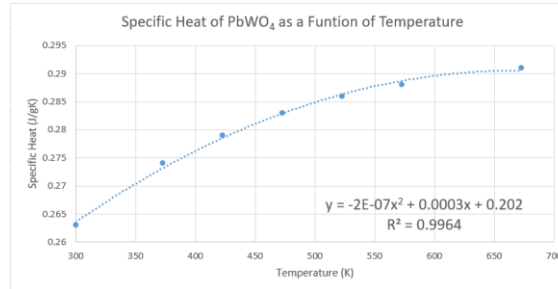
Hall C – NPS

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

- Researching thermal properties of $PbWO_4$ crystal; generated graphs showing temperature dependence of thermal conductivity and specific heat capacity

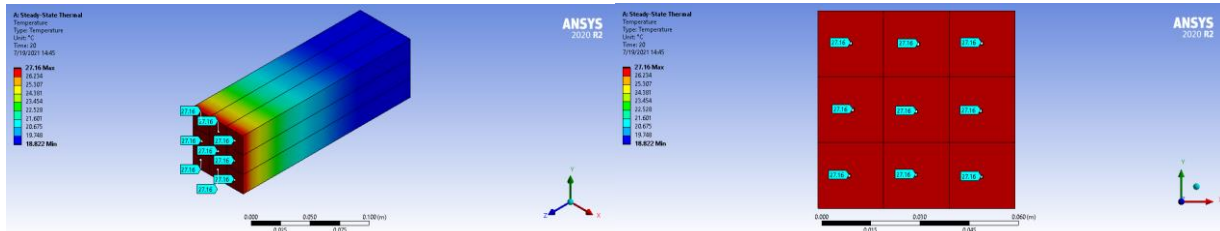


Plots showing thermal conductivity in x- and y-directions (left) and z-direction (right) as a function of temperature



Plot showing specific heat capacity of $PbWO_4$ crystal as a function of temperature

- Using Ansys, conducted a thermal analysis of a 3x3 block of $PbWO_4$ crystals with a heat load of 1 W applied to each crystal



3x3 block of $PbWO_4$ crystals with 1 W of heat applied to each crystal

- Revised LabVIEW code to make the average of all temperatures within the front and back of the crystal zone a rolling average
- Reviewed interlock override design
- Stress tested potting of the pins for a spare Radiall 52-pin connector; pins did not move

EIC

Brian Eng

- Changed beam pipe into a dynamic component