Hall A – ECAL

Pablo Campero, Marc McMullen

- Completed heater controls installation and debugging
- Verified PID controls for all five channels by heating to various temperatures and observing stabilization
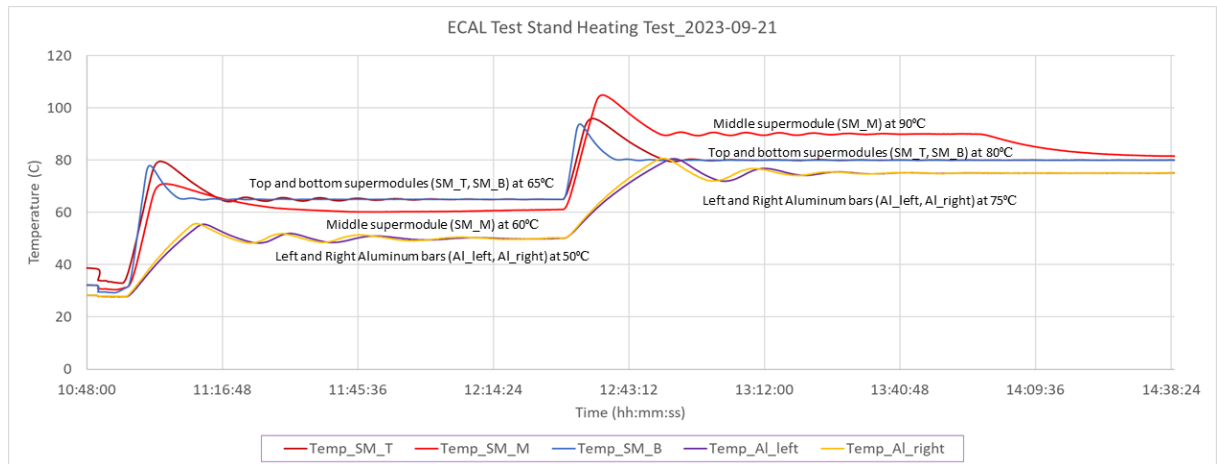

- Started installation of 16-channel thermocouple module that will monitor the surfaces of the six-supermodule test stand crystals
- Rebuilt dsg-halla-1 computer and installed LabVIEW 2019 to support heater control system

Hall C – NPS

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

- Fabricated or reworked 45 cables with Fischer, SMA, and Samtec connectors
- Working on code to automatically disable interlock and averaging if a sensor is disabled
  - ✴ If the sensor enable is disabled (Boolean changed to False from True), the Booleans for the corresponding interlock and averaging enables are also disabled
  - ✴ For the detector frame and hall, if the temperature or relative humidity sensor is disabled, the corresponding dew point interlock and averaging enables are also disabled
- Began major revision of control and monitoring software
  - ✴ Organized two variable libraries into sub-folders
  - ✴ Removed three frames from chiller subVI sequence
  - ✴ Began changing local variables to shared variables, which allows creation of more subVIs from existing code

- Ansys Fluent thermal analysis
  - ✴ Third simulation in steady state, with recommended changes, has same high temperature problem as previous simulations
    - ▪ Temperature >850°C in the same spot in air volume surrounding the crystal array
    - ▪ Maximum temperature for crystals in the central section did not reach steady state and shows values >34°C

report-plot-0
Sep 19, 2023
ANSYS Fluent 2023 R1 (3d, dp, pbns, sstkw)
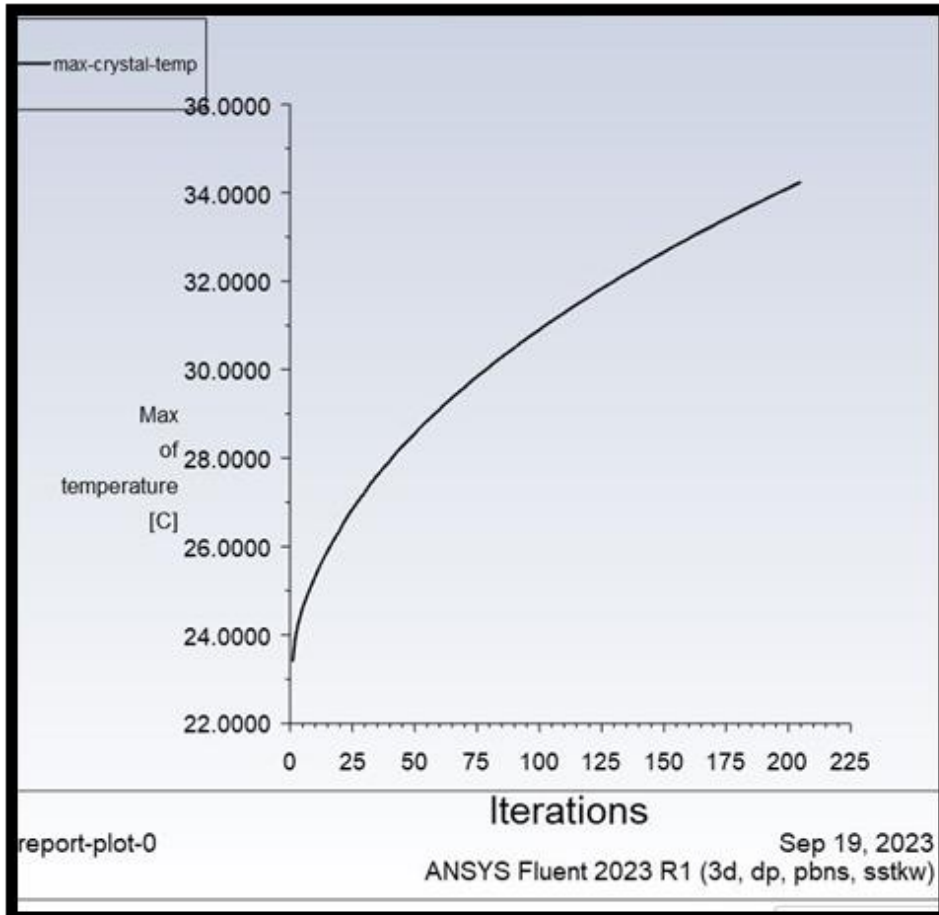
  - ✴ Contacted Ansys support again and followed recommended changes to Fluent solver setup and reran simulation for each change
  - ✴ Evaluating contour plots and report definitions from the simulations
- Ansys Mechanical thermal analysis
  - ✴ Modified geometry resulting in a model with only the required components for thermal analysis
    - ▪ 1080 crystals, copper cooling plate, carbon fiber dividers and mu-metal dividers
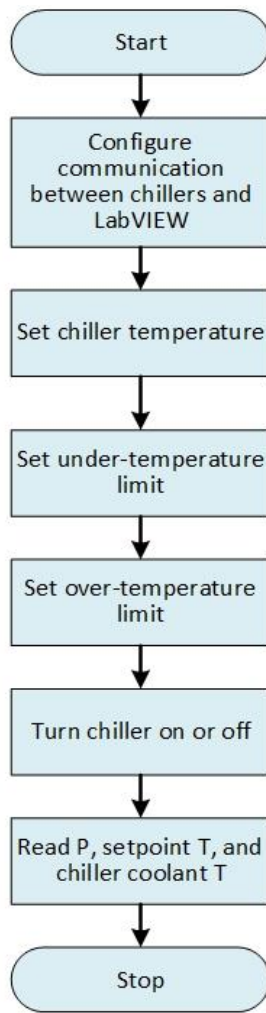 - ✴ Completed mesh of modified model

- Made Visio flowchart of LabVIEW code for chiller control and monitoring

```
                    ┌──────────┐
                    │  Start   │
                    └──────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │ Configure            │
              │ communication        │
              │ between chillers and │
              │ LabVIEW              │
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │ Set chiller          │
              │ temperature          │
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │ Set under-temperature│
              │ limit                │
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │ Set over-temperature │
              │ limit                │
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │ Turn chiller on or off│
              └──────────────────────┘
                         │
                         ▼
              ┌──────────────────────┐
              │ Read P, setpoint T,  │
              │ and chiller coolant T│
              └──────────────────────┘
                         │
                         ▼
                    ┌──────────┐
                    │  Stop    │
                    └──────────┘
```

NPS Control and Monitoring Software
Control and Monitor Chillers
Mary Ann Antonioli
9/22/23

Hall D – FCAL2
Mindy Leffel

- Wrapped nine Crytur crystals with 3M foil and Tedlar; 842 completed

EIC - DIRC
*Peter Bonneau, Mindy Leffel, George Jacobs, Tyler Lemon, and Marc McMullen*

- Sent revised laser interlock board for manufacture
- Started review of DAq board schematic
- Continued Phoebus alarm test software for interlock
  - ✦ Developed Kafka messaging streams

- Continued assembly of laser interlock system's interior control unit
  - ✦ Attached and wired front panel LEDs and key switches
  - ✦ Attached 25 BNC connectors onto side panels and wired
  - ✦ Wired two DB25 connectors on bottom
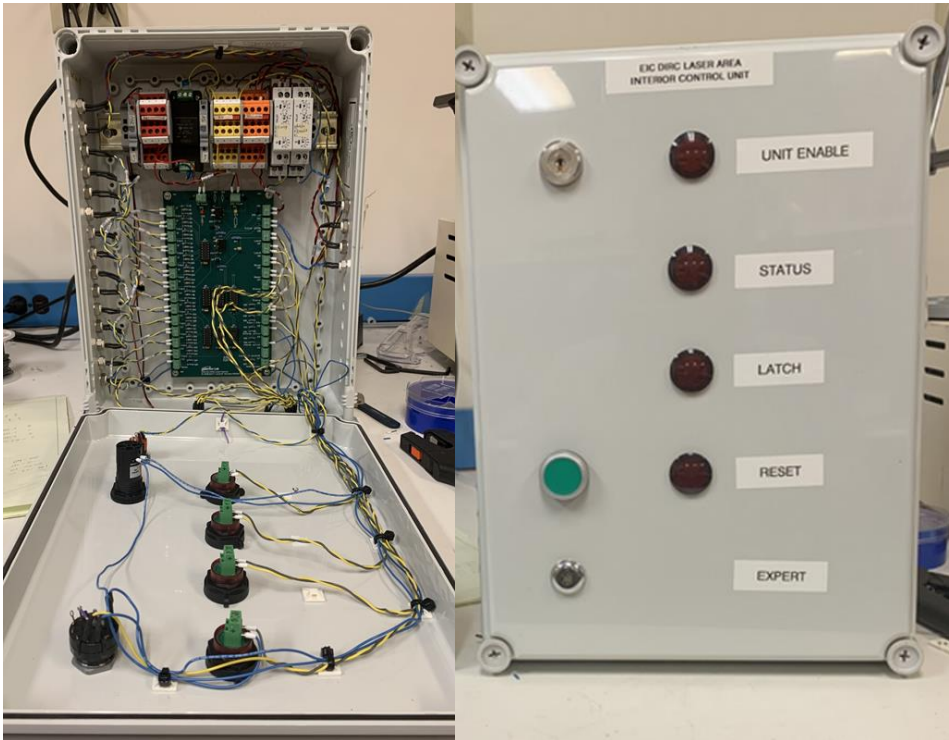
- Working on wiring diagram of interior control unit
- Received brackets designed in NX12 that hold normally-open limit switch that is actuated by side walls being rotated up into place
  - ✦ Attached switches to brackets; brackets will be attached to the optical table

EIC - Thermal Test Stand
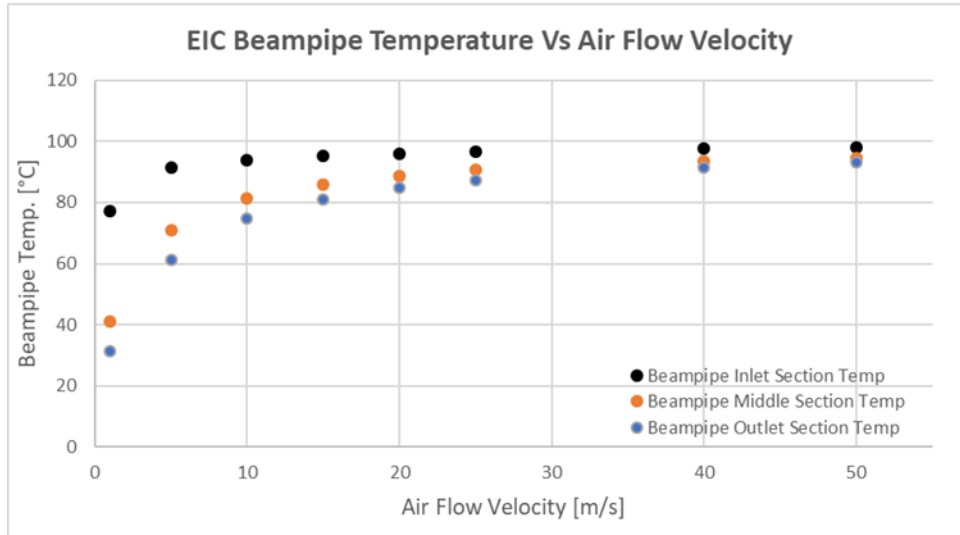*Pablo Campero, Brian Eng, George Jacobs, and Marc McMullen*

- Completed flow tests using six layers of polyimide insulation
  - ✶ Silicon layer 1 target temperature of ≤ 30ºC reached at 410 L/m airflow
- Completed Ansys simulation
  - ✶ Temperature between inlet and outlet sections starts to converge after airflow velocity increases to 40 m/s

DSG
Peter Bonneau and Marc McMullen

- Conducted quarterly safety walkthrough
- Continued to revise website