

# Detector Support Group

*We choose to do these things “not because they are easy, but because they are hard”.*

**Weekly Report, 2023-04-19**

## Hall A – ECAL

*Brian Eng, Tyler Lemon, and Marc McMullen*

- Continued writing controls software for six-supermodule test stand
  - ★ Changed control channel count from four to five so the temperatures of the supermodules, which are stacked vertically, can be set as pairs, allowing the user to set the controls for each pair to compensate for convection
    - Three channels of two supermodules in parallel
    - Two channels of aluminum bar heated for the boundary
- Disassembled single supermodule test stand in EEL industrial oven
- Started installation of the controls equipment for the six-supermodule test stand in the physics storage building



Six-supermodule test stand in the physics storage building

## Hall A - GEp

*Mindy Leffel*

- Completed two and a half high voltage boxes; eight of 22 completed

## Hall A – Møller

*Mary Ann Antonioli and Brian Eng*

- Reviewed OCEM Power Electronics company’s factory acceptance testing procedure for power supplies; lacks details of the supply’s remote capabilities

## Hall B – LTCC

- Changed pressure settings for S2 while it was being moved to floor level, which required the bubbler to be moved. Troubleshoot lack of return flow (pump wasn’t plugged in)
  - ★ <https://logbooks.jlab.org/entry/4155091>
  - ★ <https://logbooks.jlab.org/entry/4155164>



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## Hall C – NPS

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

- Added all PVs to the softIOC in development; ensuring all PVs are of the correct data type for the information they will transmit
- Added monitoring to non-array Phoebus screens for chiller coolant, crystal zone cooling circuit, front crystal zone temperatures, and detector frame temperature, relative humidity, and dew point
  - ★ Revised menu screen
  - ★ All screens completed
  - ★ Started testing with random numbers

Monitoring												Control																			
Crystal	T [°C]	Avg [°C]	σ [°C]	Intlk status	Latch status	Crystal	T [°C]	Avg [°C]	σ [°C]	Intlk status	Latch status	Crystal	Alarm limit [°C]	low	high	Sensor enable	Avg enable	# of pts. to avg	Intlk enable	Trip delay enable	Trip delay time [s]	Crystal	Alarm limit [°C]	low	high	Sensor enable	Avg enable	# of pts. to avg	Intlk enable	Trip delay enable	Trip delay time [s]
0	<champs	<champs	<champs			540	<champs	<champs	<champs			540	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	540	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
5	<champs	<champs	<champs			550	<champs	<champs	<champs			550	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	550	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
10	<champs	<champs	<champs			560	<champs	<champs	<champs			560	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	560	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
15	<champs	<champs	<champs			570	<champs	<champs	<champs			570	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	570	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
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180	<champs	<champs	<champs			704	<champs	<champs	<champs			704	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	704	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
185	<champs	<champs	<champs			709	<champs	<champs	<champs			709	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	709	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
190	<champs	<champs	<champs			714	<champs	<champs	<champs			714	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	714	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
195	<champs	<champs	<champs			719	<champs	<champs	<champs			719	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	719	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
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215	<champs	<champs	<champs			879	<champs	<champs	<champs			879	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	879	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
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390	<champs	<champs	<champs			1054	<champs	<champs	<champs			1054	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	1054	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
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509	<champs	<champs	<champs			1064	<champs	<champs	<champs			1064	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	1064	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
519	<champs	<champs	<champs			1069	<champs	<champs	<champs			1069	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	1069	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
529	<champs	<champs	<champs			1074	<champs	<champs	<champs			1074	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	1074	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs
539	<champs	<champs	<champs			1079	<champs	<champs	<champs			1079	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	1079	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs	<champs

Phoebus screen to monitor and control back crystal zone temperatures

- Debugging EPICS server problem in thermal readback LabVIEW program
  - ★ Program will run, but will not create the EPICS server
  - ★ All signals are scanned, but none get sent to EPICS
- Debugged communication issue with serial modules for chillers; communication with the chiller in DSG possession has been restored
- Began making new alarm testing Phoebus screens, without arrays, completing back crystal zone
  - ★ Updated spreadsheet with new PVs
- Developing program to aid in Phoebus alarm system debugging
  - ★ Program will monitor and record alarm system messaging streams, which are used to communicate between programs
  - ★ Phoebus does not have a tool that can directly monitor the message streams
- Continued detector volume thermal analysis
  - ★ Contacted Ansys tech support concerning detector model errors
    - Found tools in SpaceClaim equivalent to Design Modeler to combine and subtract volumes
  - ★ Combined all 14 parts as one body and shared topology; each part can still be analyzed individually

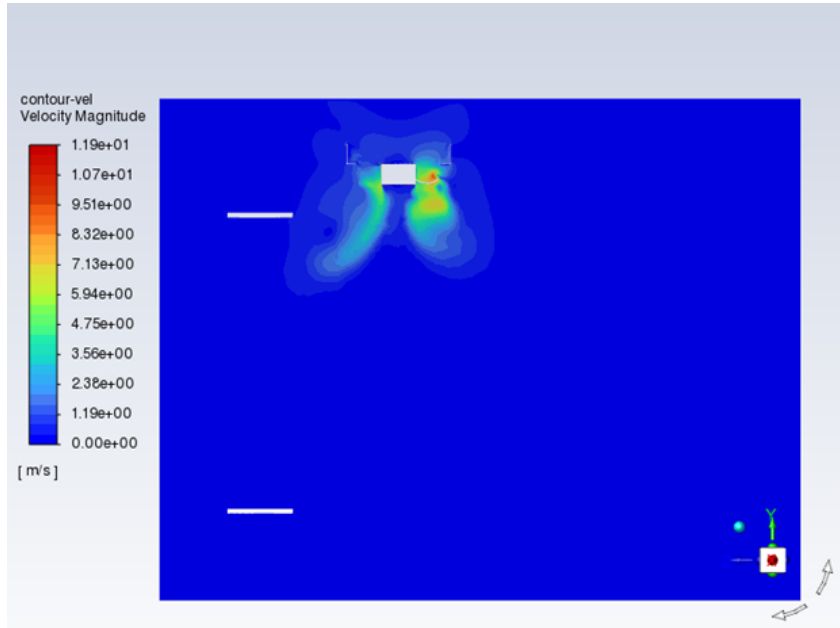


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- ★ Implemented model in Fluent
- ★ Ran initial simulation, rotating one of the four fans at 1000 RPMs
  - Generated temperature contour plot and velocity contour plot; compared



YZ-plane for velocity contour plot

## **Hall D – JEF**

*George Jacobs. Mindy Leffel*

- Disassembled, cleaned, and inspected 15 crystals
- Wrapped seven crystals with 3M foil and Tedlar; 718 wrapped to date

## **EIC**

*Brian Eng*

- Since engineering development is slow on tracking detectors, working with Chinmay Andhare on using monolithic active pixel sensors to arrive at a possible sensor layout for the B0 detector.

## **EIC-DIRC**

*Tyler Lemon and Marc McMullen*

- Increased power trace widths for 24-V output circuit on laser interlock board

## **DSG Website**

*Peter Bonneau*

- Investigating methods of implementing table cell hyperlinking that the JLab web development software Drupal will accept without automatic reformatting