



Detector Support Group

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

Weekly Report, 2023-08-16

Hall A - ECal

Brian Eng, Mindy Leffel, and Marc McMullen

- Set up cRIO to be closer to production system
 - ★ All required software now running on cRIO (instead of on computer); logging done locally until EPICS is deployed
- Completed low-temperature testing (<100°C) of six-supermodule controls
 - ★ Trained users on operating the software
- Fabricated three high voltage cables with two Fischer connectors; 15 of 23 completed

Hall B – Gas System

Brian Eng

- Working on using existing ActiveMQ broker to accept MQTT
 - ★ Received protocol errors when trying to access from development subnet to clon00; debugging

Hall C – NPS

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng,

Mindy Leffel, and Marc McMullen

- Made two more LabVIEW subVIs of shared variable arrays breaking out into individual shared variables; began subVIs of building a shared variable array from individual shared variables (completed one)
 - ★ Each subVI handles the same array type (such as sensor enable, average, or lo limit) for each detector area (such as crystal zone or detector frame); one subVI can have up to 14 break-outs or builds
- Began Visio flowchart of control and monitoring code
- Ansys Fluent thermal analysis
 - ★ Due to current computer (EXPCAMPERO) having too little memory to mesh cells, obtained access to computer PHYCOMP2 with larger memory (256 GB) and more processors (12)
 - Ordered RAM to update EXPCAMPERO to its maximum of 512 GB
 - ★ Installed Ansys 2023R1 on PHYCOMP2; migrated Ansys project files to PHYCOMP2
 - ★ Started mesh of model
 - ★ To make simulation faster, investigating methods to reduce the number of cells for the mesh, without affecting quality of simulation
 - Reduced the mesh of the model to 100 M cells; opening mesh file on PHYCOMP2 still slow



Detector Support Group

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

Weekly Report, 2023-08-16

Hall D – JEF

Mindy Leffel

- Populated 25 PMT bases; 550 of 1750 completed (number of bases needed was raised from 1200 to 1750)



Completed PMT base with six added wires

EIC - DIRC

Mary Ann Antonioli, Mindy Leffel, Tyler Lemon, and Marc McMullen

- Started 3D printing horseshoe clamps and mounting fixtures
 - ★ No parts completed; issues with 3D printer causing poor print quality
 - ★ In contact with Formlabs to find resolution
- Creating Visio flowcharts of test stand user interface
 - ★ Completed stage connect subroutine

Detector Support Group

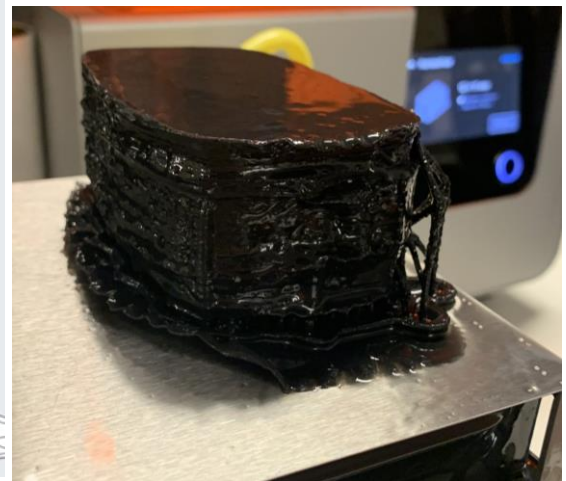
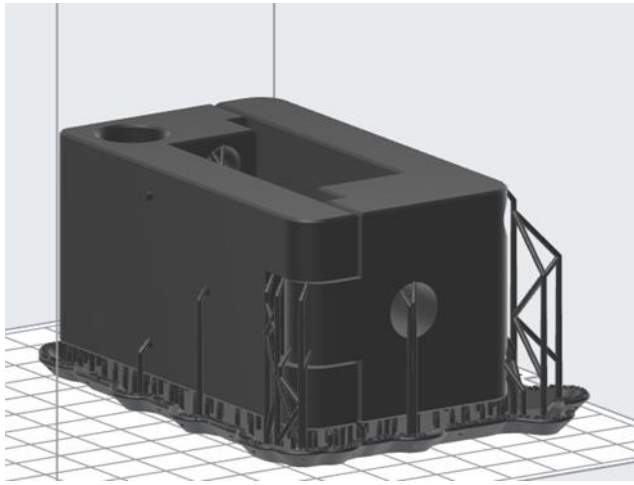
We choose to do these things "not because they are easy, but because they are hard".

Weekly Report, 2023-08-16

DSG

Tyler Lemmon

- Debugging 3D printer
 - ★ Consistently printing poor quality, even with new resin and resin tray
 - ★ Contacted Formlabs (printer manufacturer) for advice
 - Checked resin tray and resin for contaminants
 - Cleaned optical window under resin tray
 - Cleaned printer's main mirror
- Ran test print, which failed; sent photo of results to Formlabs



Left: screenshot of 3D printer's slicing program showing ideal model of horseshoe clamp, right: failed print of horseshoe clamp after cleaning, but before curing

- Researching 3D printers to purchase
 - ★ Only considering FDM (fusion deposition modeling) printers; current stereolithography (SLA) printer has had consistent problems; FDM printers are generally more reliable and it is easier to clean parts after fabrication
 - ★ Three printers being considered; waiting on quote for UltiMaker S7

Printer	Company	Type	Build volume [inches]	Layer thickness range [μm]	Base printer cost
Form 2	Formlabs	SLA	5.7 x 5.7 x 6.9	25 - 300	N/A - printer on hand
Method	Makerbot	FDM	7.5 x 7.5 x 7.75	20 - 400	\$4,999.00
MK4	Prusa	FDM	9.84 x 8.3 x 8.6	50 - 300	\$1,099.00
S7	UltiMaker	FDM	13 x 9.4 x 11.8	20 - 200	Waiting for quote