

DSG Ansys R&D Meeting

Date: June 22, 2023

Time: 2:00 PM – 2:30 PM

Attendees: Aaron Brown, Pablo Campero, Tyler Lemon, and Marc McMullen

1. EIC test stand thermal analysis

Pablo Campero, Brian Eng, and Marc McMullen

1. Set model, boundary, and cell zone conditions in Fluent
 - Selected Laminar model and steady state
 - Set air flow mass rate for the inlets at 150 SLM and 23°C
 - Used constant thermal properties for the mineral oil
 - Set heater elements (x2) as the heat source for the model with a value of 2,959,553 W/m³ (value based on the estimated temperature for each heater)
2. Discussed preliminary results shown in temperature and velocity contour plots
 - Maximum temperature at the heater element of ~274°C
 - Maximum beampipe temperature of ~160°C
 - Maximum silicon pipe temperature of ~42°C
 - Airflow velocity at the outlet of the anulus space was 15 m/s; investigation in progress

2. NPS thermal analysis

Pablo Campero and Aaron Brown

1. Moved model files from network drives to local drive on EXPCAMPERO PC
 - Discussed using an external drive to store backup files for all current Ansys projects
2. Working on the 3D model
 - Relabeling components of the model
 - Setting up fluid and solid domains
 - Merging individual crystal elements and dividers to the detector volume model with the simplified cooling system
3. Researching methods to analyze thin structures efficiently